The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XXVI. February 6, 1932 No. 658

Communications relating to editorial matter should be addressed to the Editor, who will welcome contributions dealing with modern chemical developments. Communications relating to advertisements or general matters should be addressed to the Manager. Prepaid subscription, 21s. per annum United Kingdom ; 26s. abroad. Cheques, Money Orders, and Postal Orders should be made payable to Benn Brothers, Ltd.

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Notes and Comments

Assessments Must be Reduced

SEVERAL rating authorities recently made representations to the Minister of Health, as provided for in Section 19 the Rating and Valuation Act, 1925, requesting that legislation be promoted for postponing beyond April 1, 1934, the date of the operation of the second valuation lists which are shortly to be prepared. It is reasonable to argue that if the operations of the Land Tax can be postponed, and rightly, because of the present economical conditions, a halt should be called to the expensive and irritating business of re-valuation and re-assessment. The Central Valuation Committee, however, has decided not to recommend the suggested postponement, on the ground that the disadvantages and injustices which would arise outweigh any arguments in favour of postponement. The Committee states that the amount collected annually in England and Wales (excluding London) amounts to more than £120,000,000 for rates, making a total approximately for the five years' tenure of the second valuation of £600,000,000. To conduct the re-valuation would, in the Committee's view, generally be less difficult than was the preparation of the first lists, and postponement might even increase the cost.

The re-assessments of property are, therefore, due to be made in the not far distant future, for the Act provides that the new list shall be so made as to come into force on April 1 in the year 1932, 1933 or 1934. Industry—and by no means least of all, the chemical industry—is faced with the necessity of putting up a strong fight for the reduction of assessments. Some industrial organisations are urging that the five-year interval should be extended to at least seven years; but something more than postponement is necessary. There must be a campaign for reduced assessments, and if these can be achieved this year or next, so much the better than waiting for a longer period. In connection with the campaign for economy, it is too little realised that while the standard rates and taxes may have been fairly stationary, the rate in the pound having in some cases been actually reduced, the assessments upon which they are levied have been pushed up out of all reason.

An Outstanding Example

THE City of Bradford affords an outstanding example of the effect of the last assessments. The rateable value of Bradford in 1914 was £1,616,967, and in 1930 it was £2,667,324, although in the meantime the trade of the city had dwindled, and premises were, therefore, worth far less than ever. These increased assessments have pushed up not only Schedule A income tax, surtax and local rates, but water charges and all other charges of a similar nature. While a number of chemical firms were more or less satisfied with the last assessments, there was a good deal of hardship in individual cases. One large concern, for example, reports that the rating assessments on its three main properties were advanced by no less than 22½ per cent., a very considerable rise, which, moreover, would have been much greater if the issue had not been fought with the greatest energy.

Instances of this kind, and even of a more drastic character, could be multiplied, and we should welcome particulars from our readers of their own experiences, in order to demonstrate the urgency of the need for effective action. There is a real danger of further hardship if definite action is not taken in good time, and industry must leave no stone unturned in its endeavour to secure a measure of relief from its present burdens. The assessment committees, of course, can only decide on

the evidence put before them; and unless the applicants are able to go before them with clear evidence there is little hope that they will be able to prove that the list, in many cases drown up by experts, is unfair. Expert must therefore be ranged against expert, and we have little doubt that if the case for industry is properly and adequately made out, the result will be to the advantage of those who are now labouring under an unfair burden.

The Melchett Medallist

CONGRATULATIONS are due, not only to the recipient, but to British science as a whole upon the award of the second Melchett Medal of the Institute of Fuel to Professor W. A. Bone, head of the Department of Fuel Technology at the Imperial College of Science, who was the guest of the Institute at the medal presentation dinner on Monday night. The award is made without restriction as to the nationality of the recipient, and last year it went to Dr. Kurt Rummel, of Germany. Professor Bone has amply fulfilled the specification that the recipient of the medal is called upon to fill, and his Melchett lecture on Monday was typical of the thoroughness of the whole of his work. It was as one of the late Professor H. B. Dixon's research pupils at Manchester that Professor Bone achieved his first well-known success. This was in connection with the theory of explosions in gaseous mixtures, and Professor Bone is perhaps even more famous for his subsequent work on this wide subject—which, of course, is of the first importance to designers of motor-car and other internal-combustion engines—than for his remarkable record in other branches of fuel research.

Having graduated in the Honours School of Chemistry at Victoria University, Professor Bone soon set to work to hand on his knowledge to others, and he became a lecturer in chemistry and metallurgy at Owens College in 1898. There he remained for seven years, and since then he has without a break been connected in a professorial capacity with universities or colleges, while at the same time prosecuting the original researches which have earned him honours from many countries and greatly facilitated both the production and the use of many different fuels.

Sulphate of Ammonia Propaganda

FERTILISER propaganda ranked among the principal activities of the British Sulphate of Ammonia Federation during the past year, and its achievements in this direction are reviewed in the eleventh annual report, from which we gave extracts last week. Despite many handicaps, chief among which were the unremunerative prices obtainable for nearly all agricultural produce, the expenditure on the Federation's propaganda was fully justified by the results. An increase in personnel in this country enabled close touch to be maintained both with agents and with consumers and was one of the most important factors in counteracting the effects of foreign competition. There are now 26 representatives in the British Isles, four being in Scotland and four in Ireland. On June 30 the Federation, over which Sir David Milne-Watson, governor of the Gas Light and Coke Company continues to preside, consisted of 245 members, and their production for the calendar year 1930 was 93 per cent. of all the sulphate of ammonia manufactured in this country. During the past two years 107 members of the Federation have ceased production.

The I.C.I. Research Station, Jealott's Hill, has done much to focus attention on the importance of fertilisers in rural economy and has indirectly helped to stimulate sales in this country. The practice of applying sulphate of ammonia to grassland is steadily increasing and researches now being carried out at Jealott's Hill hold promise of further developments in this direction. Many farmers have proved the value of nitrogen in respect of early and late bite, with the result that their grazing season has been prolonged, leading to a considerable reduction in their purchases of concentrated foodstuffs.

Books Received

ECONOMIC CONDITIONS IN THE REPUBLIC OF EL SALVADOR. November, 1931. By D. J. Rodgers. Department of Overseas Trade. London: H.M. Stationery Office. Pp. 34. 1s.

THE LAW OF PATENTS FOR CHEMISTS. By Joseph Rossman. Washington, U.S.A.: The Inventors Publishing Co. Pp. 304. $3.50.

THE MECHANICAL HANDLING AND STORING OF MATERIAL. By George Frederick Zimmer. 2 vols. London: Crosby, Lockwood & Son. Pp. 896. £3 3s.

The Calendar

Feb. 8.—Institute of Metals (Scottish Section). "Aluminium Silicon Alloys—Their Properties and Some Applications." R. B. Deeley. 7.30 p.m. 39 Elmbank Crescent, Glasgow.

Feb. 8.—Ceramic Society (Pottery Section). "The Pachimeter." A. K. Schofield and G. W. Scott Blair. "Continuous Filtering and Drying of Pottery Slip." L. A. Mitchell. 7.30 p.m. North Staffordshire Technical College, Stoke-on-Trent.

Feb. 9.—Institute of Metals (Swansea Section). "Zinc—the Utility Metal." E. Evans. 6.15 p.m. Y.M.C.A., Swansea.

Feb. 9.—Institute of Metals (N.E. Coast Section). "Some Developments in Non-Ferrous Alloy Founding." H. C. Dews. 7.30 p.m. Armstrong College, Newcastle-on-Tyne.

Feb. 9, 16 and **23.**—Royal Institution. "Recent Work on Crystal Analysis." Dr. G. Shearer and Sir William Bragg. 5.15 p.m. 21 Albemarle Street, London.

Feb. 10.—Society of Dyers and Colourists (Midlands Section). "Modern Methods of Hosiery Dyeing." H. B. Mudford. 7.30 p.m. Loughborough Technical College.

Feb. 10.—Institute of Metals (London Section). Joint Meeting with the Electroplaters' and Depositors' Technical Society. "Some Recent Advances in Protective Coatings on Metals." H. Sutton. 8.15 p.m. Northampton Polytechnic Institute, St. John's Street, London.

Feb. 10.—Institute of Fuel. Joint Meeting with the Sheffield Chamber of Commerce. "The Utilisation of Coke Oven Gas in the Iron and Steel Industry." Dr.-Ing. H. Lent. 6.15 p.m. Cutlers' Hall, Sheffield.

Feb. 10.—Institution of the Rubber Industry. "The Relation of Laboratory Testing to Service." R. P. Dinsmore. 7.30 p.m. First Avenue Hotel High Holborn, London.

Feb. 11.—Institute of Chemistry (Manchester Section). "Recent Work on Alcoholic Fermentation." Dr. A. Harden. College of Technology, Manchester.

Feb. 11.—Society of Chemical Industry (Nottingham Section). "Safety in Chemical Industry." J. Davidson Pratt. 7.30 p.m. University College, Nottingham.

Feb. 11.—Optical Society. Ordinary Meeting. 7.30 p.m. Imperial College of Science and Technology, London.

Feb. 11.—Oil and Colour Chemists' Association. "Modern Ball-Mill Technique." S. Wilmer Kendall. 7.30 p.m. 30 Russell Square, London.

Feb. 12.—Chemical Engineering Group. "A New Method for Measuring the Mechanical Properties of Metals." L. H. Hounsfield. 8 p.m. Burlington House, London.

Feb. 12.—Society of Chemical Industry (Glasgow Section). "The Significance of Valency as elucidated by a Study of the Solid State." Professor W. H. Bragg. 7.30 p.m. Royal Technical College, Glasgow.

Feb. 12.—Oil and Colour Chemists' Association (Manchester Section). A paper involving Problems in Paint Application. Frank Fancutt. College of Technology, Manchester.

Feb. 12.—Institute of Metals (Sheffield Section). Discussion on certain Zurich Meeting papers. 7.30 p.m. University, Sheffield.

Feb. 12.—Royal Institution. "Petroleum—A Record of Achievement in Applied Science." Sir John Cadman. 9 p.m. 21 Albemarle Street, London.

Feb. 12.—Society of Chemical Industry (South Wales Section). "Modern Developments in Paint and Varnish Industry." Dr. D. G. Hopkins. 7.30 p.m. Thomas' Cafe, High Street, Swansea.

Achievements in Fuel Research

Presentation of Melchett Medal to Professor W. A. Bone

ON Monday, February 1, the Melchett Medal of the Institute of Fuel for 1931 (the second to be awarded) was presented to Professor W. A. Bone, F.R.S., head of the Department of Fuel Technology at the Imperial College of Science. The presentation was made by Sir Hugo Hirst, President of the Institute of Fuel at a meeting held in the lecture hall of the Institution of Electrical Engineers, London.

The Founding of the Melchett Medal

The Melchett Medal was instituted by the founder-president of the Institute of Fuel, the first Lord Melchett, who offered sufficient money to keep the medal in perpetuity. It is awarded annually—in accordance with the conditions laid down by the late Lord Melchett—to such person, whether a member of the Institute or otherwise, who, in the opinion of the Council has done either original research or professional, administrative or constructive work of an outstanding character, involving the scientific preparation or use of fuel, provided the results of such work have been made available within recent date for the benefit of the community. Last year, Dr. K. Rummel, of Düsseldorf, was the recipient, in view of his researches leading to a reduction in the cost of producing steel and for his work in forming the Heat Economy Bureau which supervises researches connected with the German iron and steel industries. Professor Bone, however, has been awarded the medal for his researches as a whole, dating from the time when he was a research student at Owens College, Manchester, of which he was elected Berkeley Fellow in 1892, and where he was lecturer in chemistry and metallurgy from 1898 to 1905. He had previously graduated in the honours school of chemistry at Victoria University, obtaining the Mercer Scholarship and Le Blanc Medal in metallurgy.

Achievements of Professor Bone

Before making the presentation, Sir Hugo Hirst paid a tribute to the late Lord Melchett. Everyone present at the meeting would regret, he said, that they had been deprived of the opportunity of seeing the medal presented by the great man responsible for its foundation, and who had taken so much pains and trouble in the creation of the Institute of Fuel. His knowledge of chemistry, of physics, of natural history, of industry, of politics and of social work was such that his words would have been picked up by all as precious jewels. He was missed by the Institute to a greater extent than could be expressed, and he was missed by the country as a whole. At this time, which future historians would perhaps describe as the crisis of the British Empire in the twentieth century, no man could have expressed the situation more clearly, and no man could have been more helpful than he in diagnosing it and advising the powers that be. Professor Bone, he continued, had by his work fulfilled to 100 per cent. the specification that the recipient of the Melchett Medal should fulfil. At college he was soon picked out by the late Professor Dixon to help him in his researches on gaseous explosions, and then he had been concerned with mathematics, physics, mineralogy, and so on. No wonder he had been selected to start the Fuel Department at the University of Leeds; that within a few years he had been awarded the Howard Potts Medal; and that the Imperial College of Science and Technology had selected him to start the Department of Fuel Technology there—a department which he had directed for twenty years. His work on the chemistry of fuel, gaseous explosions, blast furnace reactions and allied subjects had brought him eminence and had stamped him as one of the men of whom England was proud.

Referring to the Melchett lecture which Professor Bone had prepared, he said it was a most wonderful exposé of the history of fuel developments during the past 100 years, presented in such a manner that the layman could understand it. Sir Hugo appreciated particularly, however, the prologue and the epilogue. The former contained a lesson to those pessimists who lived amongst us, who did not realise that a hundred years ago this country was relatively worse off than it is to-day. If our ancestors had been able to face the deplorable and difficult situation which had prevailed after the Napoleonic wars and to restore this country to prosperity, surely we could do it again to-day. The epilogue was an appeal to the youth of the country, emphasising that the value of a man was assessed not on what he did for himself, but upon what he did for the community. A man who could bring forward such ideas deserved the Melchett Medal.

The World's Material Progress

If the world's material progress could be assured by its consumption of coal and iron, said Professor Bone, in the course of his lecture, how marvellous would be the record for the past century. A hundred years ago the world's production of iron was certainly less than 2,000,000 tons per annum. In 1929 it had reached 97,250,000 tons, or a fifty-fold increase. As regards coal, although no precise figures were available for a century ago, Sir Richard Redmayne, in his evidence, before the 1925 Coal Commission, estimated the whole world's output in 1829 at 28,300,000 tons, while in 1929 it was just over 1,300,000,000 tons, of a 45-fold increase during the century. To put it in another way, in 1829 about 17,000,000 people in Great Britain consumed some 600,000 tons of iron and steel, or about 80 lb. per head per annum. In 1929, 45,000,000 of us, their descendants, consumed about 10,000,000 tons, or about 500 lb. per head per annum, a more than sixfold increase per capita. As regards coal, the per capita increase has been fivefold. Professor Bone then dealt in detail with the history of the iron and steel industries, from "the epoch-making invention of hot blast in iron-smelting by Neilson in 1828" to the recent achievement of the German blast-furnace, which has a weekly output of 7,520 tons of pig iron, with an expenditure of only 1,688 lb of coke per ton of iron.

The performance of this blastfurnace was a veritable achievement of mechanical science. As the result of a century's effort it has produced as much iron in an hour as one did in a week in 1829, and at about a fifth the cost in fuel. Besides which it has required the development of mechanical devices whereby in every minute of the week some 2,135 tons of material are hoisted up 90 ft. and automatically charged into the furnace, a ton of iron and slag is removed at the bottom, about 70,000 cubic feet of air are pre-heated and pumped through the tuyères, and some 90,000 cubic feet of gas conducted away from the top and utilised in adjacent appliances. The germ of all this lay in Neilson's invention, which, after a century's development, has resulted in a direct fuel-saving on the whole world's present output of iron which cannot be computed at less than about 100,000,000 tons of coke per annum.

A Guest of Honour at Dinner

In the evening Sir Hugo Hirst presided at a dinner held at the Connaught Rooms to do honour to Professor Bone. Proposing the health of Professor Bone, the President said he was proud to be able to express to Professor Bone how much the Institute of Fuel and the country as a whole appreciated his great and magnificent efforts in connection with fuel problems.

Professor Bone, in his response, recalled his early connections with the Cleveland district, of which he was a native. He had attended school at Middlesbrough at the time when Gilchrist and Thomas were putting the finishing touches to the basic Bessemer steel work process. In 1888 he had gone to Manchester to receive training in chemistry and allied sciences in order that he might enter the iron and steel industry. As the result of his interest in the properties of carbonic oxide, and also as the result of the influence of Professor Dixon, he had been diverted to scientific research. Though he had not entered the iron and steel industry, he had maintained for many years—until the death of his uncle, the late T. C. Hutchinson, in 1918—a very close connection with the developments in the utilisation of blastfurnace gas from the point of view of fuel economy. The steel industry had made great progress during the last thirty years, more particularly in the utilisation of that really wonderful gas, which was produced by the blastfurnace in such prolific quantities, and the secret of the economic production of steel was largely bound up with those efforts.

Chemical Trade in the Dutch East Indies

Overproduction in the Rubber Industry

A decline in general prosperity in the past three years is recorded in a Report on the Economic Conditions in the Netherlands East Indies, by Mr. H. A. N. Bluett, commercial agent at Batavia, issued by the Department of Overseas Trade (H.M. Stationery Office, 3s. net).

THE import of varnishes and dyes is lower than in 1930 and considerably lower than the average of the past three years. The import of red lead to Java has dropped from 578 tons for January-June, 1930, to 309 tons for the same months of 1931, of which Holland supplied 129 tons, Japan 123 tons and Great Britain 42 tons. In zinc white, imports to Java for the same periods have dropped from 452 tons to 228 tons, of which Belgium supplied 119 tons, Germany 41 tons, Holland 39 tons and Great Britain 9 tons. In other paints, imports to Java for January-June, 1931, totalled 1,104 tons, of which Holland supplied 532 tons, Great Britain 235 tons, Germany 117 tons, the United States 117 tons and Japan 65 tons. Local production is increasing. The depression in the batik trade is reflected in the import returns for dyes, which are lower for the first six months of the year than for any similar period since 1918. Imports are principally from Germany. Great Britain supplied 19 tons of alizarine dye and Germany 72 tons out of a total import of 93 tons. In synthetic indigo, Germany supplied 214 tons, France 53 tons and the United States 43 tons.

Chemicals and Fertilisers

Imports of chemicals to Java for January-June, 1931, have been well maintained and in some cases show an increase for the same period in 1930. The import of caustic soda has increased from 2,625 tons to 3,283 tons. Great Britain leads with 1,388 tons, followed by the United States with 892 tons and Germany with 835 tons. Imports of chemical preparations and medicines in small packings for the first six months of the year totalled 513,874 kilograms, valued at 1,614,000 florins, which is a slight increase over the same period in 1930. Germany's share was 738,250 florins and Great Britain's 71,400 florins. The import of ammonium sulphate amounted to 104,560 metric tons. The import of superphosphates and double phosphates dropped from 5,535 tons for January-June, 1930, to 3,436 tons for January-June, 1931. Japan supplied 1,948 tons, Holland 970 tons and Belgium 518 tons. Imports of other chemical and natural fertilisers to Java increased from 5,263 tons for January-June, 1930, to 6,986 tons for January-June, 1931.

Java Sugar Restriction Ordinance

An outstanding event in the history of the sugar industry is the adoption by the International Sugar Conference of the Chadbourne Plan for restricting sugar production which led to an ordinance being agreed to by the Volksraad (People's Council in Batavia) on March 18, 1931, for a temporary restriction of sugar exports from the Netherlands East Indies. The amount of sugar that may be exported for the five years, 1931 to 1935, is fixed at 2,300,000; 2,4000,00; 2,500,000; 2,600,000 and 2,700,000 tons respectively; to meet these figures and balance production and sales, Java must decrease her output by 15.3 per cent. in 1932, 11.9 per cent. in 1933, 8.6 per cent. in 1934 and 5.1 per cent. in 1935.

Opinions are divided as to how far the adoption of the Chadbourne Plan by Java producers will eventually strengthen the position of the local industry. There are those who think the world's consumption and production of sugar in 1936 will have reacted to a state of equilibrium and allow of the sugar growing industry as a whole being profitably continued on an open and strictly competitive basis, while others are of the opinion that the advantage which will accrue from the Chadbourne restrictive measures may be completely nullified by increased sugar production in Russia and in other countries that are not signatories to the international agreement.

The Rubber Industry

The rubber industry is now in an extremely difficult position due to overproduction having assumed still greater proportions as a result of a further decrease in consumption during the past year. Several schemes have been propounded for bringing about an agreement between British and Dutch growers by those who believe that the industry can be strengthened by restricting planting and exports. It is, however, significant that the Governor-General in his address at the opening of the People's Council on June 15, after reviewing the measures that had been taken for restricting tin and sugar exports, stated that in the rubber industry the great difficulties which would have to be faced are still such as to make ineffectual any Government intervention for the carrying out of restrictive measures.

A number of rubber estates have closed down and others are reduced to a care and maintenance strength. There are many persons prominent in the financial and commercial life of the country who are of the opinion that nothing but restriction, under State control, of both the export and further planting of rubber, can save the industry from complete disaster. The hope is freely entertained that the Government's attitude towards rubber restriction may shortly undergo important modifications.

Petroleum

Exports of the principal petroleum products during 1930 and January-June, 1931, are shown in the following table, the figures for 1931 being preliminary figures:—

	1930	Jan.-June, 1931
	(thousand literes).	
Kerosene—		
Java and Madura	15,511	5,674
Outer Islands	618,731	254,549
Total	634,242	260,223
Benzine and gasoline—		
Java and Madura	156,498	58,014
Outer Islands	1,619,168	751,905
Total	1,775,666	809,919
Crude oil, liquid fuel, Diesel oil and solar oil—		
Java and Madura	104,717	62,081
Outer Islands	2,295,562	899,987
Total	2,400,279	962,068
	In thousand Kg.	
Lubricating oils—		
Java and Madura	62	Not available
Outer Islands	31,626	13,804
Total	31,688	13,804
Paraffin—		
Java and Madura	10,704	5,259
Outer Islands	18,887	13,615
Total	29,591	18,874

Production of Crude Oil

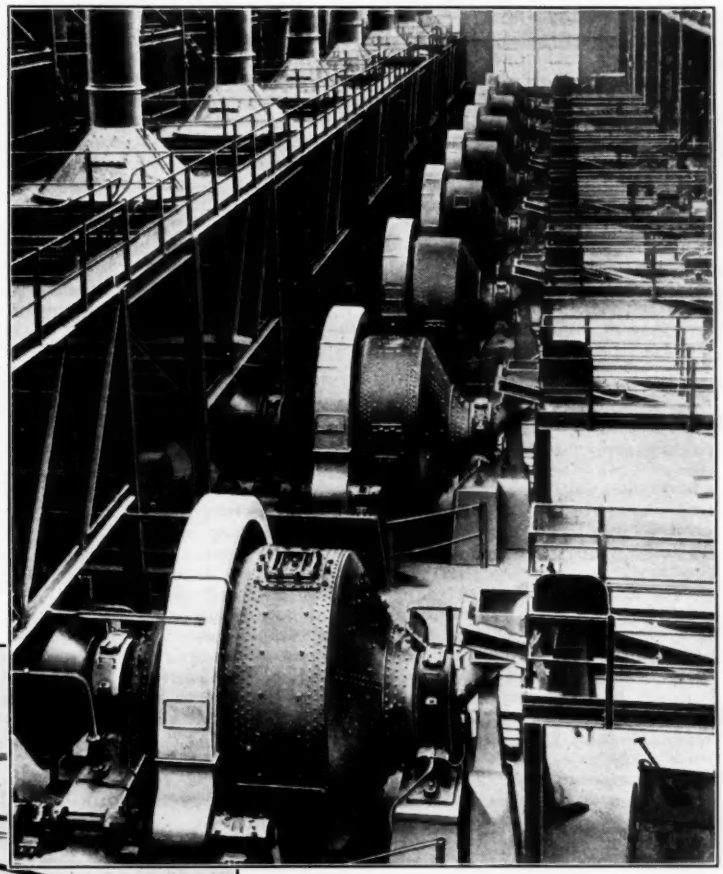
The production of crude oil has increased steadily since 1927, though for the current year output will be considerably curtailed, which is in pursuance of the policy adopted by the controlling groups for curtailing the world's production of petroleum and petroleum products. A number of wells have been temporarily closed down, with the result that there is some distress among both natives and Europeans who have thus been thrown out of employment. The prospecting of potential oil fields is being carried on as actively as ever. The local consumption of petrol is increasing, though the price is still high in comparison to that in other producing countries, which is due to a price agreement having been arranged between the Bataafsche Petroleum Maatschappij and the Standard Oil Company of New York. Petrol is selling in Batavia at approximately 1s. 7½d. per imperial gallon.

Dustlessness in Dry Grinding

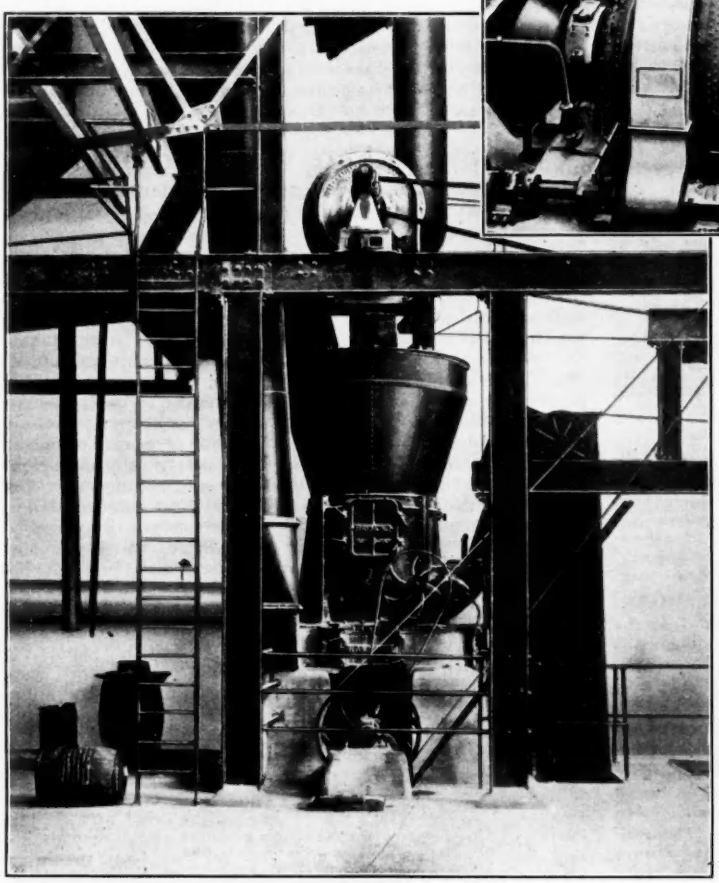
Two Examples of Modern Equipment providing for Ideal Conditions

In dry grinding operations insufficient attention seems to be given to the choice of equipment which will attain a high degree of efficiency coupled with the desirable condition of a dust-free atmosphere. Dust is not only injurious to the health of the employees at the factory; it also constitutes a serious hazard in cases where the material handled is of a combustible nature and therefore liable to form explosive mixtures with air. Even with non-combustible materials there is the possibility that the dust will be carried about the works with consequent contamination of other products. Dustlessness is therefore a factory condition which should be completely attained so far as that is possible.

One of the accompanying illustrations shows a battery of nine 10-ft. Hardinge Mills and Hardinge Air Classifiers engaged in the fine grinding of mineral rock. The capacity of this battery is approximately 1,000,000 tons of rock per year, being one of the largest and most modern dry grinding plants in the world. The photograph was taken under actual working conditions after the plant had been in operation for twelve months and the entire absence of dust is especially noticeable.



A Battery of 10-ft. Hardinge Mills with Air Classifiers.



The Raymond Roller Mill photographed under actual working conditions.

The second (lower) illustration shows a smaller dry grinding installation in which the ideal condition of dustlessness has also been attained. Here, the Raymond Roller Mill has been operating daily for about three years grinding a metallic oxide to such a degree of fineness that 85 per cent. passes through a 300-mesh screen. During this period it has dealt with over 20,000 tons of material, and the expenditure in respect of maintenance has not exceeded thirty shillings. The complete absence of dust is again noticeable, as the photograph was taken under actual working conditions.

In both installations large and small, the system is placed under suction, so that no escape of dust can possibly take place even if part of the piping becomes damaged. Excess air drawn into the system is vented to "collectors," by way of which it is expelled as clean air after the removal of the dust which is carried. With such modern equipment absolute dustlessness is ensured. In addition, none of the finely-ground material is lost; there is a minimum of wear and tear for the machinery concerned, and employees can work under comfortable and safe conditions.

Modern Trade Tendencies

Mr. H. A. F. Lindsay on New Conditions

MR. H. A. F. LINDSAY read a paper on "Modern Trade Tendencies and Where They are Leading" at a meeting of the London Section of the Society of Chemical Industry held at Burlington House on February 1. He suggested that economic relations, whether national or international, were losing much of their old instinctive values and were gradually acquiring instead new and more conscious values. Was it not a fact that they saw on every hand the grand old laws of demand and supply, of diminishing returns and so forth, which used to reign undisputed in the economic kingdom, checked and diverted in countless directions by the operation of new principles? These had not yet supplanted the old, but they seemed certainly to be better adapted to the changed conditions of modern life. Could it be said nowadays that the laws of demand and supply applied with the same force to the world's' labour markets as they did to commodity markets? He would be inclined to say that they did not, and that in most civilised countries the level of wages was governed by factors which were largely humanitarian.

Passing of the Old Regime

He suggested that the laws of economics, as they had inherited them, were based on a régime which was slowly passing away in favour of a new principle. Granted that efficiency was the ideal to aim at, the old régime was one in which efficiency was sought under tremendous pressure—of free and unrestricted competition. This competition and pressure was to be seen operating at their maximum in free trade England. The underlying idea was the essential idleness and carelessness of human nature, which could not be trusted to turn out its best results if left to itself and had to be driven to its greatest efforts and its highest efficiency by some force superior to itself, the force of competition. The line of reasoning which produced the régime of unrestricted competition, and had served England so well in the past, was however, based on two singular fallacies—or should they say on two assumptions?—which, however valid they might have appeared to be in the past, were now shown in their true guise as fallacies.

The one assumption was that the efficiency attained by free competition was worth all the wastage of labour and capital which inevitably attended success. It was difficult, and perhaps impossible, to strike a correct balance between the relative values of efficiency and of the materials necessarily wasted in the competitive pursuit of efficiency. But it was at least arguable that the waste might become excessive. The other assumption was that a purely man-made régime could be finally or universally stronger than the spirit of man, to which it owed its origin. He believed that it was pure fallacy to maintain that the economic laws were supreme and that they represented forces against which they rebelled in vain. He believed that they were the products of mankind working in co-operation towards a common end, and that, although they defied the opposition of the individual, they must bow to the concerted will of humanity when, acting under pressure of new political or social ideals, the old economic code was found to require amendment, even radical amendment, not merely of the text, but of the spirit which had hitherto animated and inspired it.

Science Outstrips Economics

In this sense he suggested that science had outstripped economics, that science had been quicker to respond to the new spirit which was now abroad, a spirit which was best described as a changeover from the ideal of competition to the ideal of co-operation; from the ideal of efficiency attained under pressure of environment and other outside forces, to the ideal of efficiency to be attained by mankind working consciously, constructively, and in co-operation towards a common goal. They could not eliminate competition altogether, and they probably would not do so so if they could. But he suggested that as a constructive force it was too instinctive, too haphazard, and too unreasoning to be allowed to occupy the whole field. Its future position would be definitely subordinated to a new force more constructive, more controlled, and therefore itself better qualified to exercise deliberate and conscious control.

Points from the Discussion

DR. E. F. ARMSTRONG said final selling prices generally were being inflated by heavy sales and advertising expenses and it was to a large extent these heavy-on-costs which were making sales unprofitable, and the continued demand for lower and lower production costs, without any attempt to reduce these other charges meant world-wide unemployment and misery whilst the highly paid advertising and sales staffs went on in their affluence to the bitter end. Our monetary system had collapsed and our credit system had collapsed. Was it not likely that our whole manufacturing and production system was collapsing in the same way because of the manner in which the costs of goods was being pushed up by heavy sales and advertising costs?

MR. W. J. U. WOOLCOCK recalled that when he was president of the Society he had consistently urged chemists to take a greater interest in economics and said the discussion suggested that that advice had been taken. Referring to stocks, he mentioned that in connection with dyestuffs there was an extraordinary increase in the amount imported and sold during October and November. The real reason for that, in his judgment, was that the Lancashire manufacturer who usually held three months stock had reduced this to one month when bad times came along, but now there was a glimmering of an improvement in trade he had returned to the old custom of holding three months supply. There was a danger of being misled by looking only at the stocks in the hands of the primary producer and not taking account of those in the hands of the man who was going to use the product.

MR. J. DAVIDSON PRATT suggested that inflation, uncertainty and instability were the causes which had brought about the present state of affairs and it was a question to consider whether the control over wages, etc., since pre-war days had not upset the whole balance and had had certain natural reactions. If human affairs could only be treated with the same spirit of service as the scientific side was treated, there would be far more success and far less suffering. Therefore, he strongly supported the author's plea that in the future old economic laws or theories should be swept aside and that a new system should be built up based not on competition but on co-operation.

Smoke Abatement Problems

Proposed Regional Organisations

THE Council of the National Smoke Abatement Society, at a meeting held at York on January 26, passed a series of resolutions urging that local authorities should combine for the purpose of setting up suitable statutory regional organisations for the administration of smoke abatement law, and that pending the formation of such organisations they should establish advisory committees.

A report of the meeting states that the administration of the law relating to smoke emission varies considerably throughout the country. In a large number of cases the law is either completely ignored or is put into operation only intermittently and ineffectively. In other cases it is primarily effected by observations taken by sanitary inspectors, the duties of whom have increased so enormously since 1875 that it is a practical impossibility to obtain effective observations of smoke emission by an official whose time is fully occupied by other numerous and urgent daily duties which are now required. Only in the larger cities and boroughs is it possible to provide for the service of whole-time smoke inspectors.

As an illustration of the results of this rather chaotic state the figures issued by the Manchester and District Regional Smoke Abatement Committee may be cited. Some 536 observations in which dense black smoke was recorded were made in Manchester and the same number in 33 surrounding districts. To obtain these observations took 1,300 working days in Manchester and 42 working days in the outer districts. The average black smoke emission per half-hourly period was 1.8 minutes for Manchester and 9.2 in the 33 other areas. In Manchester 71.3 per cent. of the emissions were for less than two minutes, but only 3.7 per cent. for the other areas. The corresponding figures for 10 to 20 minutes emission were 1.5 per cent. for Manchester and 32.5 per cent. for the other areas. The cost of administration by a statutory regional organisation is likely to be much less than the cost of an equivalent service carried out by the constituent authorities.

The Works Chemists' Duties and Responsibilities

Freedom and Personality

THE subject of "The Works Chemist in Relation to Other Members of the Staff" was discussed at a largely attended meeting of the members of the Birmingham and Midland Section of the Institute of Chemistry held at the Birmingham Chamber of Commerce on January 27. Dr. Wardlaw, of the Chemical Department of the University of Birmingham, presided. The subject was introduced by Mr. A. W. Knapp (chief chemist, Bournville Works), and Mr. G. King, hon. secretary of the Birmingham and Midland Section of the Society of Chemical Industry.

The industrial chemist had, Mr. Knapp said, an important and quite definite sphere of activity, and it was well to determine in what way it impinged upon the activities of other members of the staffs in works. In most large works there was a buyer and a chemist. If chemicals or materials which required analysis were to be bought, the right person to advise the buyer was the chemist, who should draw up the specification. He should be in a position to refuse to consider materials offered that were unsuitable or contained impurities to which he knew his firm would object. Material supplied should be examined by the chemist before payment was made and before it was passed into the factory. Under what conditions should a buyer be allowed to over-ride the chemist? If complaints were made by the foreman the chemist was usually consulted; in some cases, he might be insulted. He might frequently find himself in dispute between the buyer and the foreman, so that he needed much tact. The chemist should be the colleague of the works manager; not his servant.

Freedom for the Chemist

In his opinion the fully trained chemist should be responsible only to the directors; to be a good inspector of purchases he should be quite free. In every factory the chemist should be a potent force in the service department, co-operating with the works manager, foreman and other members of the staff. If the best use was to be made of the scientific staff its members must be given a certain amount of control; the chemist must be scientific always, though he could learn much from old craftsmen who formed theories based on working experience, but without knowing the hard facts. The right man to make records of processes was the chemist. Economic mass production methods could be determined by the chemist and the engineer, but on the maintenance of standards there must be continual oversight by the chemist. Processes needed exact recording, as changes in small details might mean deterioration of the product. The engineer should control the mechanical side; the foreman, the employees; the chemist, the processes. It was difficult to say who contributed the most valuable work—the engineer or the chemist—but unless the process was purely chemical, most of the credit went to the engineer. There was not, generally, sufficient appreciation of the chemist's responsibility in connection with processes. Co-operation was essential between the laboratory and the sales department, whose members should be equipped with accurate information as to the constituents of a product. Above all, the chemists' department should be popular in a works.

The Hub of the Works

MR. G. KING (Albright and Wilson, Ltd., chemical manufacturers, Oldbury) emphasised the importance of the laboratory being a centre around which the social life of a works should revolve. The chemist was in direct touch with the men, for while he had to carry out laboratory researches, many of the results had to be reconsidered when the processes were put out for big scale operations in the works. As the chemist obtained the data he should control processes until they were accepted as profitable undertakings. Where chemicals were manufactured for sale as such, the chemist should have control in relation to purity standards by regular analyses and the purchases of raw materials. Work had frequently to be done outside the ordinary routine, and there must be a spirit of reciprocity between engineer and chemist. If there were to be a proper appreciation of the importance of the works laboratory, all departmental heads should know something of chemistry. They should be handmaidens of the laboratory. Moreover, the chemist should not deliberately restrict his activities to chemical work; he should know sufficient of pure physics to appreciate what the engineer was doing; he should also know something of economics, of costing and selling, and in his own case it had been necessary to understand something of geology, architecture, building materials and patent laws. Those salesmen who underrated the chemistry department did so through lack of knowledge or understanding. Again, it was essential that the chemists' reports to the directors should be couched in language as non-technical as possible. In the construction of chemical plant only the chemist should determine the specifications.

What the Chemist Should Know

MR. D. W. PARKES contended that the work of the chemist was not infrequently the fundamental force in the success of a works, though the credit often fell elsewhere. An absence of technical training in departmental heads did not permit of a proper appreciation of the inestimable value of a close alliance of science with industry. The salesman was often ignorant as to the analyses and the meaning of the analyses of the products he sold. Just as he needed a little chemical knowledge, so the chemist should know something about costing, sales and chemical engineering.

MR. NICHOLLS contended that the chemist in engineering works should be responsible for the acceptance of metallurgical materials. His inspection would be made largely by means of the microscope for physical properties, supplemented, it might be, by laboratory work in respect of chemical composition. Chemistry was not sufficiently understood by many boards of directors, who seemed to regard it as a sort of magic by which, with an inefficient laboratory, all sorts of wonders could be done.

Mr. HEWIS said that full costing information should be afforded to the chemist, but that was often withheld. The chemist who initiated processes should have a hand in the designing of the plant. Questions relating to power came within the province of the engineer.

Importance of Personality

MR. J. R. JOHNSON (hon. secretary, Birmingham Branch of the Institute of Chemistry) pointed out that the question of the status of the chemist in a works depended frequently upon his own personality, though many instances could be cited in which the chemist was kept continually in the laboratory without having access to the responsible heads of the other departments. He was entitled to the fullest information as to the samples which were submitted to him, but some firms did not appreciate that the chemist could exercise a potent influence on the economic side. The chemist was often ill paid through lack of appreciation of the importance of his work, and consequently his status, in relation to other members of the staff, suffered. Again, laboratory obsession militated against the chemist; he was thought to be "too narrow," and that fact was traded upon by others. The chemist should cultivate wider interests and fully uphold the importance and dignity of his calling. There were some who inconsiderately regarded him as "a queer kind of bird seen only when trouble was brewing."

MR. HEWIS said many chemists regarded themselves as belonging to a "close corporation." They kept themselves too much to themselves and did not make the value of their work sufficiently known to the manager or director, with the result that they sometimes got dubbed as theorists.

MR. GARFIELD THOMAS said he had sometimes heard it suggested that a works under the management of an engineer was better than that managed by the chemist, but he did not know that such a view was justified. It was apparent, in any event, that the chemist should have regard to the principles of business administration.

DR. WARDLAW pointed out that the Universities could not give personality or works experience. They could, and did give efficient scientific training, but some manufacturers made the mistake of expecting young graduates on entering their businesses to show practical works experience.

New Technical Books

THE speeding up of industry has been due in no small measure to the development of mechanical methods for the handling of materials. This is very noticeable from even a casual glance through the pages of G. F. Zimmer's *Mechanical Handling and Storage of Material* (Crosby, Lockwood and Son, 2 vols., pp. 896, price £3 3s. net), which has now entered its fourth edition. The author has not only drawn upon his own wide experience, but has also placed before his readers selections from the best world-wide authorities who have concerned themselves with the cosmopolitan problems coming within the scope of this book. It was not until comparatively recent years that the engineer was able to render any effective assistance in handling and conveying, but no branch of engineering has developed so rapidly. In the introduction of suitable machinery America no doubt took the lead, a step which was largely due to the peculiar conditions of that country, where a saving in labour prior to 1914 was more important than in Europe. On the Continent, however, the lead taken by America was quickly followed, and methods for mechanically handling a wide range of materials are now more or less universally adopted. Zimmer's book is divided into definite sections which deal with (1) the continuous handling of materials, as by conveyors of the worm, push-plate, scraper and band types, gravity buckets, vibrating or reciprocating troughs, etc.; (2) continuous handling, by pneumatic and hydraulic means; (3) intermittent handling, by endless rope and chain, aerial ropeways, mono-rails and telphers; (4) unloading and loading appliances, such as skips, grabs, and cantilever cranes; and (5) the unloading of railway wagons, which is a subject fully deserving special and detailed treatment. All the very latest developments are included, and the value of the work is considerably enhanced by the inclusion of over 1,250 illustrations.

* * *

Colloids, by Ernest S. Hedges (Arnold, pp. 272, price 12s. 6d. net) is a non-mathematical text book dealing with this subject. It has been written more especially for students of chemistry, but the subject matter has been treated on sufficiently broad lines to interest students of physics, biology and geology. The author was a late Darbishire Fellow in the University of Manchester and for some years he delivered courses of lectures on colloid chemistry at Bedford College, London University. Considered as a whole this book is not quite the same as in many other books on colloids. The properties of gels and the peculiarities of chemical reactions and other processes taking place therein have received greater attention in relation to the rest of the book. This has been done intentionally, because natural colloids appear more often in the form of gels than sols, and biological and other reactions normally take place in gels. No attempt has been made to describe technical processes, but the last chapter endeavours to show some of the ways in which colloid chemical principles have been applied successfully to industrial processes.

* * *

IN the seventh edition of *Quantitative Chemical Analysis*, by Henry P. Talbot (Macmillan, pp. 253, price 12s. 6d. net), the arrangement of the material and the general treatment of the subject have not been materially altered, but many important changes and additions have been made. Stoichiometric principles are discussed in detail and this phase of the subject is developed gradually in step with the related topics in the practical and theoretical discussions. Of the changes in laboratory procedure may be mentioned the inclusion of the analysis of chloride by the indirect precipitation method; the substitution of the determination of sulphur in pyrites for the determination of sulphur in barium sulphates; the expansion of alloy analysis to cover bronze; and the inclusion of a discussion of potentiometric titrations. The revision has been undertaken by L. F. Hamilton and S. G. Simpson, both of the Massachusetts Institute of Technology.

* * *

HYDROGEN-ION concentrations have long been recognised as an essential factor in many biochemical processes. In writing *Hydrogen Ions* (Chapman and Hall, pp. 589, price 25s. net), the author, Hubert T. S. Britton, has endeavoured to provide a practical discussion of the various electrometric and colorimetric methods of determining the concentration of hydrogen-ions; secondly, to show the fundamental importance of hydrogen-ion concentrations in general chemistry, including volumetric and gravimetric analytical procedure; and finally, to indicate the important roles played by hydrogen-ion concentrations in industrial chemical processes. As is well known, much controversy is taking place as to the mode of ionisation of strong electrolytes. Unfortunately, the degree of ionisation, if considered in terms of the *concentration* of ions, leads to one standard with which electrode potentials are compared, whereas, if considered in terms of the *activity* of ions it leads to a slightly different standard. In view of there being no really satisfactory theory of solutions incorporating their many properties, the author has deemed it advisable to adhere to the more usual ion-concentration theory in the interpretation of electro potentials. The volume is one of the series of monographs on applied chemistry, published under the editorship of Dr. E. Howard Tripp.

* * *

Paper Testing and Chemistry for Printers, by Gordon A. Jahans (Pitman, pp. 313, price 12s. 6d. net) is a useful book on the raw materials of the printers' craft, giving full details of the various methods of testing stationery and allied materials. The author has been both paper maker and printer and his treatment of the subject imports into it a point of view which will tend to bridge the gulf that sometimes seems to exist between the maker and the user of paper. The various chapters of the book deal with the making of paper, the classification of papers, physical and chemical tests, chemical analysis, microscopical examination, impurities in paper and machine room troubles.

Sir Ernest Benn's New Book

A YEAR ago Sir Ernest Benn published a study of the national finances which foretold in almost every detail the crisis of last autumn. *Account Rendered* was concerned with figures. His new book, *Public Affairs, or the Price of Politics*, discusses the underlying causes which have led to our present plight. Examining various aspects of modern affairs, Sir Ernest shows how in every case the influence of politics has retarded or destroyed their natural development. "By one device or another," he writes, "we have so crippled our wealth-producing agents and made such serious raids upon our wealth itself, as largely to explain the failure of our industries, the loss of our markets and the collapse of the pound."

Research in the Rubber Industry

Twelve Years' Work

SIR ROBERT ROBERTSON, Government chemist, was the principal speaker at a luncheon on the occasion of the twelfth annual meeting of the Research Association of British Rubber Manufacturers, at the First Avenue Hotel, High Holborn, on February 2, presided over by Lieut.-Colonel J. Sealy Clarke, chairman of the Association.

Proposing the toast of the Association, Sir Robert Robertson said he would be sorry to see synthetic rubber take the place of the natural product. With nature producing rubber in such profusion and at such a low price, the natural product should be encouraged, rather than the spending of money on the synthetic process. The Association's records showed that many of the problems before the research workers had not yet reached solution, but very valuable work was in progress which demanded the full support of the industry.

The Chairman, responding, said some people had complained that the Association had accomplished little. Its staff, however, had contributed over 60 papers to the scientific and technical press, and nearly 25 per cent. of the published matter in the Transactions of the Institution of the Rubber Industry originated from the laboratories at Croydon. Some 690 inquiries were dealt with last year by the information bureau, and 4,770 books were issued from the library.

Sir Frank Smith, secretary of the Department of Scientific and Industrial Research, responding to the toast of the guests, guests, proposed by Mr. P. Rosling, vice-chairman of the Association, said there was a mistaken idea among some firms that by joining a research association they were giving up all their secrets and destroying their individuality. The more progressive firms, however, realised that membership of a research association was good for themselves as well as for other firms in the industry and for the community at large.

News from the Allied Industries

Rubber Industry

THE INSTITUTION OF THE RUBBER INDUSTRY (London Section) will meet at the First Avenue Hotel, Holborn, on February 10, at 7.30 p.m., when a paper on "The Relation of Laboratory Testing to Service" will be read by Mr. R. P. Dinsmore, chief chemist of the Goodyear Tyre and Rubber Co., and ex-Chairman of the Rubber Division of the American Chemical Society.

IT IS REPORTED FROM AMSTERDAM that the question of rubber restriction is being taken up again and that negotiations are being carried on at The Hague between the Minister for the Colonies and the advocates of restriction. The opponents of restriction, who include a number of large producers, did not take part in the discussions on January 27.

Glass Trade

THE MANUFACTURING GLASS TRADE in the Midlands (Stourbridge and Birmingham) has shown material improvement since a duty of 50 per cent. was imposed on imports of foreign glass after November 25. Stocks were largely reinforced in the autumn when the foreign glass makers saw that steps were likely to be taken to give the British manufacturer security in his home market. Imports of domestic and fancy glassware increased from 59,921 cwt. in September to 78,560 cwt. in October and 107,209 cwt. in November. December brought a fall of imports to 12,070 cwt. Attempts made after the war to retain the glass trade by equipping British factories with machinery for economical production, were defeated by the unchecked ingress from Europe of glass made under unequal economic conditions, and the English glassmaker has been driven to concentrate on trade in which quality, not price, is the first consideration.

Iron and Steel

FOR THE TIME BEING THE IRON TRADE, according to the *Birmingham Post*, has lost any resilience it had. New business which is being negotiated is negligible. At the Birmingham weekly market on January 28 the prevailing stagnation was attributed in some quarters to the expectation of speedy relief from extreme foreign competition. Members of the trade in touch with the inner developments of the situation were confident in their assurances that after the disappointment suffered in December, British ironmasters are now to be given a measure of security in their home market. Industrialists preoccupied with the problem of finding present employment for their plant, and with a long experience of hope deferred, successfully concealed any elation they may have felt at the prospect. Continental shippers, however, are taking full protection against the consequences of a tariff at British ports. The Central Pig Iron Producers Association held their usual monthly meeting at which the position was reviewed, but it was decided to make no change in current prices.

Canning

THE SCHEME FOR A CO-PARTNERSHIP ENTERPRISE to undertake the canning of agricultural produce from Lancashire and Cheshire has advanced a stage further by the circulation of a preliminary notice outlining the aims of the promoters and inviting the support of producer and retailer interests. The proposal is to form a company to be known as the Northern Poultry and Canned Food Co., Ltd. This company will be formed on a co-partnership basis—that is to say, as far as possible its shareholders shall comprise those who are concerned in one way or another as growers, producers or distributors of the company's products. The business of the company will be to can and pack poultry and any other produce which may be conveniently dealt with by way of the canning processes. The existing distributing organisation of Bushell Brothers, Ltd., of London, covering the United Kingdom, Ireland, the Dominions and Colonies, wil be at the service of the new company. The capital proposed is £25,000 in £1 shares, no shares being issued otherwise than for cash. The company will probably also investigate the possibilities of putting on the market a dried milk to compete with the present imported article, as well as cheese packed in small boxes to suit market convenience. The location of the factory has not yet been decided upon.

Beet Sugar Industry

THE ANGLO DUTCH GROUP of Beet Sugar Factory Companies, which operates the factories at Cantley, Kelham, Ely, Ipswich and King's Lynn, have issued to their growers for the 1932 season a letter offering a contract on a co-operative basis. This method, in their judgment, will give the fairest results, as the growers and the factory will share throughout in the actual white sugar prices and unconditional Government assistance upon the operations of the campaign. The contract provides that the common fund to be shared on a co-operative basis between each factory and its growers collectively is the whole net proceeds from the manufacture of white sugar, pulp and molasses, together with any unconditional Government assistance, without provision for dividends, reserves, depreciation, directors' fees or additions to plant and buildings. The growers' share shall be 80 per cent. and the factory's share 20 per cent. until the return to the growers reaches 45s. per net ton delivered on the basis of 15½ per cent. sugar content. Thereafter the shares of the growers and the factory shall be 50 per cent. each.

Paper Making

SHAREHOLDERS OF WIGGINS, TEAPE AND CO. (1919), LTD., have authorised the directors to increase the capital of the company from £2,530,000 to £3,000,000 by the creation of 470,000 new shares of £1 each. Resolutions have also been approved providing that 200,000 of these shares shall be Preference shares ranking *pari passu* with the existing 7 per cent. issue, and that the remaining 270,000 shares shall be at the disposal of the directors to issue as either Preference or Ordinary capital as and when they may think it expedient. It is proposed to offer the 200,000 Preference shares to the existing shareholders and debenture stock-holders at 20s. 6d. each for the purpose of financing the recent acquisition of a controlling interest in the Dartford Paper Mills, Ltd. At the company meeting held in London on February 1, Colonel Wyndham Portal, the chairman, revealed that the directors were considering plans to manufacture greaseproof paper in this country, and if the conditions were suitable it was intended to erect a new mill at Dartford for the manufacture of this paper on a considerable scale. It would then be necessary to raise further capital, and it was for that reason that the increase in the authorised capital was desired.

Cement Manufacture

ALLIED CEMENT MANUFACTURERS, LTD., held their statutory first meeting of creditors in London on Wednesday, January 27, with Mr. J. Barwick Thompson, senior assistant official receiver, presiding. Mr. Thompson stated that the company was registered as a private company on January 31, 1911, in the name of Stanlow Works Estates, Ltd.; in September, 1912, the name was changed to Ship Canal Portland Cement Manufacturers, Ltd., and the present title was adopted in August, 1929. The original capital of £100 was increased at intervals to £5,000,175, and the issued capital was £1,848,445. The company was converted into a public company in March, 1911. In July, 1926, a prospectus was issued offering £600,000 First Mortgage Debentures at an issue price of 97½ per cent., redeemable at a premium of 3 per cent. on December 31, 1952. The issue was subscribed in full, and a trust deed was executed by the company. At an extraordinary meeting held in December, 1930, a resolution was passed for the removal of certain members of the old board of directors and the appointment of a new board. This plan was opposed by the Debenture holders, who, on the ground that the assets were in jeopardy, on January 7, 1931, appointed Sir William McLintock as their receiver and manager. At this date the company's investments had resulted in a total loss of £1,505,699. The company's trading accounts disclosed profits during 1920 and 1921, losses in 1922 and 1923, and profits from 1925 to 1930, during which years 7½ per cent. dividends were paid on the Preference shares and dividends ranging from 5 to 10 per cent. on the Ordinary shares. Failure was attributed primarily to the inability of British Cement Products and Finance Co., Ltd., to carry out its undertaking to provide finances for the company, and in particular its inability to complete its obligations to place an issue of £850,000 Preference shares.

Letters to the Editor

The Editor welcomes expression of opinion and fact from responsible persons for publication in these columns. Signed letters are, of course, preferred, but where a desire for anonymity is indicated this will invariably be respected. From time to time letters containing useful ideas and suggestions have been received, signed with a nom-de-plume and giving no information as to their origin. Correspondence cannot be published in THE CHEMICAL AGE *unless its authorship is revealed to the Editor.*

Scientific Farming

To the Editor of THE CHEMICAL AGE.

SIR,—Preliminary investigations into this subject have led to the conclusion that the future of agriculture in this country should be worked out on a seven year plan. Farming in the future must be organised on different lines, and follow recent developments in scientific farming which are so promising, and so full of interest. The whole industry should subscribe to this seven year plan, and acknowledge that any individual cases of inefficiency, at the end of that period, should be treated drastically by the Government then in power. The general plan should be put outside the range of party politics, and treated as a matter of national defence.

Everything possible should be done to further the present work, and the Government should take care that the necessary financial support is available. Objections to the setting up of large farms up to 5,000 acres should be eliminated. The 150,000 farm hands who have left the land during the last ten years must be replaced, and the 2,000,000 acres of land which have gone out of cultivation must be brought into cultivation again. This development will call for close co-operation on the part of chemists, chemical engineers, and engineers generally.

The nation should not be called upon to make unnecessary sacrifices, in order that agriculture shall remain permanently inefficient, while it might be efficient. The industry must be considered from the training college to the finished product, and operations in the field must be tempered by scientific research.—Yours faithfully,

W. P. DREAPER.

Hon. Organising Director, League of Science.
Hampstead, N.W.3.

Applied Chemistry and Schools

To the Editor of THE CHEMICAL AGE.

SIR,—The Report of the Board of Education on the Teaching of Applied Chemistry has been given favourable consideration in THE CHEMICAL AGE for January 23 and 30, as well as in other quarters. The Report, however, pays insufficient attention to a wide field of possible valuable co-ordination between teaching and industry. I refer particularly to the chemistry teaching that now goes on in practically all our secondary schools, and especially that given to boys who have passed an intermediate examination or who have gained a University Scholarship at one of the important Universities.

I am not advocating industrial chemistry in secondary schools for, up to a point, pure science serves best as a mental training, but I often feel that industrialists fail to realise that chemistry in schools to-day is a very different thing from what it was before the war.

When studying catalogues of scientific apparatus I am always struck with such headings as "Best Bohemian Glass," "Resistance Glass," "School Quality Glass" and "Royal Worcester," "Berlin Porcelain" and "School Quality." I do not agree with the use of expensive material with children but I quote the above as showing the position given to school science by the outsider. It gives one the idea that the cheapest is good enough for use in places from which our future chemists must spring.

And now another point similar in nature to the above. The chemicals supplied to schools are almost invariably supplied by local firms and, as a rule, the quality is good. But I can recall many instances where chemicals which have been supplied in bulk—or in what passes for bulk in a school—have not been quite pure, and when complaint has been made the only excuse made was that they were thought to be quite good enough for school children to waste. Such a compound as salt-petre may contain chlorides, or Chile salt-petre may still have in it an appreciable amount of iodate, and acids may not be free from iron, etc. Of course, replacement with pure material is never a difficult matter but it is the element of surprise on the part of the chemical manufacturer that schools should really want *pure* material.

Having shown that there is a certain lack of confidence between the industrial chemists and the teachers of chemistry in schools, let me pass on to a part of school work where excellent material is left unutilised. During the last few years the public schools have lost their monopoly of scholarships to the Universities and almost every secondary school in the country enters into keen competition with them. The result is that science scholarships, as well as others, are spread over the country. Now such scholarships are usually won in December or in March, so that there is a long interval between winning and going into residence. Here the industrial chemist has a great opportunity, for science masters would be only too glad to co-operate with him. There are no means at present, however, of such people getting into touch with each other, but if the applied chemists only realised what they are missing means would soon be found to formulate their needs and to bring them to the notice of science teachers through such a journal as *The School Science Review* or even through a paper like THE CHEMICAL AGE for such a weekly is widely read by teachers of chemistry.—Yours faithfully,

ALWYN PICKLES, M.Sc.,
Senior Science Master.

Wyggeston Grammar School for Boys,
Leicester.

The Water Gas Equilibrium

To the Editor of THE CHEMICAL AGE.

SIR,—We desire to draw attention to a recently published paper by W. M. D. Bryant in which some incorrect statements relating to a paper by ourselves on the above subject (*Trans. Soc. Chem. Ind.*, 1925, *44*, 149T, 242T) appear. Bryant has recalculated our tables by means of some equations for the specific heats of gases contained in our book ("The Specific Heats of Gases," Benn, 1924, p. 209) in which the absolute temperatures are used. In our paper the equations given on the same page in which Centigrade temperatures are used were definitely stated to be employed. Unfortunately the equations referred to absolute temperatures are erroneous, and should read as follows:—

Oxygen, Nitrogen, Air	$4.947 + 0.00000031T^2$
Hydrogen	$4.659 + 0.0007T$
Carbon Dioxide	$5.396 + 0.00506T - 0.00000102T^2$
Steam (273° – 1,973° Abs.)	$7.249 - 0.0024T + 0.00000234T^2$

We also take this opportunity of drawing attention to the following errata in the book: p. 169, the value 0.449 in the equations should be 0.249; p. 201, the values for C_p and C_v for nitric oxide have been interchanged; p. 211, the table should be calculated on the basis of weights, not volumes. Apart from a few obvious misprints, these are, as far as we know, the only corrections required. In making use of the incorrect equations, Bryant has naturally obtained results quite at variance with experiment. The equations now given lead to the same results as those in our paper, based on Centigrade degrees. Why Bryant should have chosen another set of equations we do not know. All the conclusions relative to specific heats which he draws in his paper from our results are erroneous, and our original communication is correct. No further experimental information relating to the water gas equilibrium which has appeared since our paper was published in 1925 has led to any essential modification in the results given in it, and we desire to warn readers of Bryant's paper that if they accept the statements made regarding our work in that communication they will be seriously in error.—Yours faithfully,

J. R. PARTINGTON.
W. G. SHILLING.

East London College,
University of London, E.1.

From Week to Week

THE FACULTY BOARD OF PHYSICS and Chemistry, Cambridge University, has appointed Professor P. Debye, of the Physical Institute at Leipzig, as Scott lecturer for the year 1932.

DESPITE THE ECONOMIC CRISES, world production and consumption of rayon yarn show new record figures in 1931. The production ranged between 200,000 tons and 205,000 tons, which is about 15,000 tons more than in the previous year, while consumption increased by about 15,000 tons to between 190,000 tons and 195,000 tons.

THE COUNCIL OF THE GEOLOGICAL SOCIETY has awarded the Wollaston medal to Professor J. H. L. Vogt, of Trondhjem, Norway, in recognition of the value of his researches concerning the mineral structure of the earth, and especially his pioneer work in the application of physical chemistry to the origin of igneous rocks and ore deposits.

ACCORDING TO THE REPORT OF THE LABORATORY of the Irish Free State there was a decline of 1,788 samples in the total number examined during the year ended March 31, 1931. The total number of samples examined was 40,235. Considerable work was carried out for the Department of Lands and Fisheries on research on kelp and carrageen moss and bands of trained investigators were stationed on the western seaboard with special field apparatus.

AT THE RECENT MEETING of the Norwegian Society of Science in Oslo, Ottar Rygh presented a report of his research work, which resulted in the discovery of the constitution of vitamin C. This research was conducted chiefly in the laboratory of the Norwegian drug firm, Nygaard & Co. Ottar Rygh and his assistants not only have been able to prepare the actual vitamin C substance in pure crystalline form and to determine its empirical formula, but they have also succeeded in finding the constitution formula of the substance and accomplishing its synthesis from the alkaloid narcotine, of which the vitamin C substance is found to be a relatively simple derivative.

THE NEW PHYSICS BUILDING of the University of Leeds is to opened by Sir William Bragg, a former occupant of the Cavendish Chair of Physics in the University, on Thursday, February 18. This new building represents part of the rebuilding scheme now in operation at the University, and it will eventually form architecturally an end link of the projected chain of stone-fronted buildings, of which the Chemical building and the Brotherton Library will shortly be prominent features. The cost of the Physics building itself, with equipment, will approximate to £60,000. After the opening ceremony Sir William Bragg will give an address in the Physics Lecture Theatre on "The Laboratory and the Citizen."

THE DEGREE OF DOCTOR OF PHILOSOPHY of London University has been awarded to Mr. Joseph Nixon, B.Sc., as the result of research work carried out at the Huddersfield Technical College under the direction of Dr. H. H. Hodgson, the head of the chemistry department. This success is the sixth of its kind to have been conferred on Dr. Hodgson's research students. The Chemical Research School of the Huddersfield Technical College, which has been recognised by grants from the Department of Scientific and Industrial Research for several years past, has published 110 scientific papers during the past nine years, whilst Dr. Hodgson has gained the Dyer's Gold Medal for Research on two occasions.

Nitrogen in Sweden

THE small Fauser-synthesis plant of the Stockholm Superphosphate Co., Ljungaverk, built in 1928, produced about 3,500 tons of nitrogen in 1930. This plant operates economically with electrolytic hydrogen as raw material, and produces ammonium sulphate (21 per cent. nitrogen), calcium nitrate (21 per cent. nitrogen), and "Ljunga salpeter" (26 per cent. nitrogen), an ammonium sulphate-nitrate, comparable to the "Leunasaltpeter" of the German dye cartel. It also oxidises some of its ammonia to nitric acid, but not enough to meet demands of local industry. By-product ammonium sulphate is produced by the only Swedish coke-oven operator, Oxelosunds Jarnverks Aktb., at Oxelosund, and by municipal gas plants, those of Stockholm and Goteborg being dominant. These three enterprises account for about 90 per cent. of Sweden's by-product ammonium sulphate.

Good Light in the Works

Illumination in Relation to Safety

MR. J. S. DOW, hon. secretary of the Illuminating Engineering Society, spoke on "Factory Lighting in Relation to Safety" at a meeting of the London Industrial Committee of the National Safety First Association at the Home Office Industrial Museum, Westminster, on January 11, presided over by Mr. R. Boyd, chairman of the Committee.

Good lighting in the factory, said Mr. Dow, comes first amongst hygienic requirements because it is obviously indispensable. No work can go on in a factory unless people can see, and no one can see without light. Adequate lighting is essential on both humanitarian and economic grounds. But considerations dictated by humanity are usually equally valid from the economic side. Everyone admits the need of taking every possible precaution to prevent employees suffering death or injury as the result of accidents, but such precautions are also good policy because of the loss that accidents invariably entail.

This loss consists of two portions, (1) the direct loss against which it is usually possible to insure, and (2) various incidental and indirect losses which cannot be insured against. Every accident leads to subsequent disorganisation of factory processes in some degree—especially if injury is involved. But many accidents, not to employees but to plant and material, may also be of great importance and may easily be caused by inadequate lighting conditions. Even if the entire loss to the manufacturer can be met by insurance, the loss involved in this spoilage is still a loss—and there are other considerations such as loss in prestige, trouble caused to third parties by failure to deliver goods to time, etc., which it is difficult to estimate.

Dangerous Shadows

Instances were given of accidents, both to workers and material, caused by various defects in lighting, such as insufficient or wrongly directed light, dazzle or misleading shadows. The latter are specially liable to cause accidents in the form of "persons falling" in certain trades. It has been shown that these and some other forms of accidents are seasonal, *i.e.*, the accident-rate is greatest in the short winter months, when artificial light is mainly used. Conditions of lighting that give rise to danger almost always also result in poor work. Thus a dim and feeble illumination, when it is a source of danger, leads to a feeling of apprehension and hesitation which inevitably slows down production whereas ample illumination results in a feeling of confidence.

A considerable amount of research into the influence of intensity of illumination on production has taken place, specially noteworthy being the investigations conducted by the Illumination Research Committee, on the effect of illumination on fine processes. It was shown that full efficiency was only attained with illuminations of the order of 20-25 foot-candles (comparable with good daylight illumination in interiors. It should not be assumed, however, that better lighting automatically ensures higher production in any factory and it is perhaps inexpedient to present the principle in this form; it is better to say that good lighting removes drawbacks that handicap the worker and makes it possible for him to put forth his best efforts. In the concluding portion of the address examples of typical modern industrial lighting installations were presented and it was explained how the fundamental requirements of good lighting (1) sufficient illumination (2) absence of glare (3) elimination of troublesome shadows and (4) steadiness of light, may be met. Of special importance are the use of white coloured paints and distempers for walls and ceilings, so as to reflect the light diffusely, and the provision of a proper maintenance scheme to ensure lamps and fittings being kept in good condition. Each industry presents special problems and instances of trades in which special conditions (such as the sue of artificial daylight) are necessary, were dealt with.

Potassium Sulphate Developments in France

THE Societe Potasse et Engrais Chimiques, formed last year by the Mines Domaniales and the Kali-Sainte-Theresa, has recently started production at its plant at Grande Couronne, near Rouen, France. This company will specialise in the production of potassium sulphate on a large scale. The first results from the new plant are proving satisfactory.

Points from Manufacturers' Literature

The Editor welcomes copies of new brochures and leaflets describing plant, equipment and products of interest to chemical manufacturers and the chemical-using trades.

TEMPERATURE RECORDERS for all temperature ranges up to 1,000° F. is the subject of a new leaflet (No. 107b) issued by the Drayton Regulator and Instrument Co., Ltd., West Drayton, Middlesex. These instruments are of the circular chart pattern which is now recognised as being very convenient for industrial purposes. When suitable temperature ranges are selected, temperature and pressure can be recorded on the same chart by instruments adapted for this purpose. For ordinary indoor and protected outdoor installations the case is supplied with a glazed cover with a machine-faced recessed bezel fitting over the edge of the wall, but where the instruments are to be installed in positions subjected to damp or dust, a glazed metal cover making a rubber gasket joint with edge of the case is supplied. In this instance, a special lever hasp, incorporating an eccentric cam, is fitted to make the joint perfectly tight. The chart is accurately centred on the driving hub and is driven by four pins. A friction device is introduced between the hub and the clockwork spindle enabling the chart to be set for time after it has been placed in position and also effectively preventing excessive strain being transmitted to the driving spindle. A spring-clip chart holding plate also enables the chart to be easily and quickly changed.

* * *

THE VISCO AIR FILTER, placed on the English market in 1921, was the first all-metal filter using oil film covered surfaces for the removal of dust from air and gases. From the description given in the attractive illustrated brochure issue by The Visco Engineering Co., Ltd., 162 Grosvenor Road, London, S.W.1, we learn that this filter occupies considerably less space than either a cloth or a wet filter. It can be built into an available opening or against a wall; it can be enclosed in a self-contained casing of any desired shape and size to suit local conditions; and it requires no attention. Neither are there any moving parts, motors, electrical connections, water to be circulated or current to be consumed. This Visco filter is made entirely of metal and there is no danger of fire originating in the filter nor of water being entrained in the air. In its standard form it consists of one or more cells fitted to framework which is fixed at the point where air enters the room, the cells being filled with innumerable short ferrules of thin coppered or rustless steel, which are coated with a thin film of special odourless, non-inflammable and non-evaporative oil, to which the dust particles adhere during the passage of the air through the filter. Such a filter is claimed to remove an average of 98 per cent. of the dust originally present in the air; in other words, the air leaving the filter will carry a maximum of 0.1 milligram of dust per cubic metre. Air-borne bacteria are also removed to the extent of 90 to 95 per cent., germicidal preparations being used to destroy the bacteria which are so trapped. The dust, which is deposited on the oil-coated ferrules, immediately becomes saturated with the oil, and thus assists in the filtering process. It is also interesting to note that these filter cells can absorb a considerable amount of dust without unduly restricting the air passage or reducing their efficiency.

* * *

LIGHT POWER GEARED MOTORS of the worm and spiral types, with powers ranging from 1/20 to 3½ h.p., and reduction ratios up to 65 : 1 are dealt with in a new catalogue (No. 1831) issued by Crofts (Engineers), Ltd., of Thornbury, Bradford. This catalogue has been arranged to give all possible information respecting design, construction and capabilities of these power units, the tables of data being so arranged that intending users may select one of the units to meet specific requirements without difficulty. Output shaft speeds for the standard units listed range from 12 to 400 r.p.m. Geared motors make a definite advance in the application of electric driving for light power mechanisms, and have many applications in chemical works and the laboratory. Such units are economical in initial cost, and maintenance charges are entirely confined to the renewal of lubrication. Power consumption is also reduced to the minimum as friction in the mechanical parts of the gear is practically eliminated by the provision of anti-friction ball or roller bearings and the system of self-lubrication which is adopted. Variable speed pulley drives are also described in this catalogue. This type of drive enables machinery to be driven at infinitely variable speeds at will, the movement of a handwheel increasing or decreasing speeds to any required r.p.m. Speeds are changed whilst machinery is running. The units are standardised in various sizes transmitting powers from fractional horse powers upwards to 10 h.p. and giving speed ratios up to 3 to 1. Machines fitted with these variable speed pulley drives have the advantage of infinitely variable speeds in an upwards or downwards direction according to the speed ratios of the variable speed pulleys. For instance, with a variable speed pulley of 3 to 1 ratio, a machine with a minimum required speed of 200 r.p.m. can be increased in regular infinite progression upwards to 600 r.p.m. or vice versa.

* * *

WELDING MAKES THE BETTER JOB in steel plate constructions, according to a new brochure showing more examples of work recently executed by Robert Jenkins and Co., Ltd., of Ivanhoe Works, Rotherham. This is the fourth series of illustrations which have been published by this firm. Among them we notice a set of steam-jacketed pans designed for a specific melting and mixing purpose. These pans are fitted with winding gear, lagged with slagwool and galvanised jacket, and are mounted on a welded steel segmental platform with a floor area of about 80 sq.ft. Other items include a 1,000 gallon horizontal storage tank with float-type level indicator and square charging opening; an acid blowing egg, constructed in two sections and prepared for rubber lining; and a de-aerator cylinder 4 ft. diameter by 10 ft. long, of 5/16 in. plate, provided with lacing straps over all welded seams, and tested to 150 lb. pressure. The increasing demand for road and rail wagon tanks for the transport of inflammable spirit, fuel oil, lubricating oils and liquid chemicals is another feature which is dealt with in detail. Although tanks of cylindrical shape were formerly used for the bulk conveyance of oil and spirit, these are now obsolete. By a careful study of the limitations involved, Jenkins of Rotherham decided to adopt a standard elliptical cross section which would result in a low centre of gravity whilst giving a maximum capacity per foot length of tank. With the advantage of full width and minimum height, such vehicles can pass safely under low bridges and into low garages, the cab being usually the highest portion of the vehicle. The low centre of gravity obtained also greatly reduces the tendency of the wagon to skid on the crown of the road, or when rounding corners. In addition, the driver obtains better visibility to the rear of the vehicle, because the rear cab windows are not blinded by the tank.

Dexine Compounds

THE engineering and shipbuilding industry for a long time has felt the need of a reliable material to withstand the various climatic conditions, and which besides being resilient, has other advantages over ordinary India rubber. "Dexine" compound, produced by Dexine, Ltd., of Abbey Lane, Stratford, London, is the outcome of strenuous experiments and constant improvements, and is briefly a composition of vulcanised India rubber and other pure ingredients manufactured under the company's specialised process. The material is of a tough and frictionless nature, and is capable of withstanding extreme temperature and impervious to the deleterious action of acids, gases, ammonia, oils, greases, etc. Its tested and proved adaptability renders it practicable to produce any article which has hitherto been made of ordinary India rubber. The standard of "Dexine" is maintained by vigorous testing at every stage in the manufacture and the pureness of the various ingredients used render its quality and properties constant under all climatic conditions. "Dexine" is used by the British and foreign Admiralties, War Office, Air Ministry, H.M. Office of Works, the leading waterworks, principal railways, the chief steamship and electric light companies, and leading chemical engineers throughout the world.

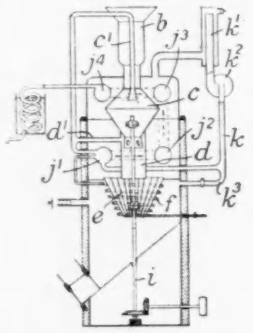
Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2. at 1s. each.

Abstracts of Accepted Specifications

357,206. LIQUID HYDROCARBONS. Physical Chemistry Research Co., 7 West 10th Street, Wilmington, Delaware, U.S.A. International Convention date, June 4, 1929.

Liquid fuel is obtained by subjecting a mixture of distillation gases, carbon monoxide and hydrogen to the action of a high potential electrostatic field and ultra-violet rays. Solid

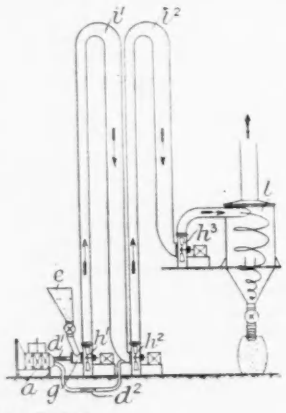


357,206

fuel is fed from a hopper *b* into a chamber *c* maintained at 500° C. by hot gases from a grate *e* so that low temperature distillation takes places, and the gases are drawn off at c^1. The fuel passes through the conduit *d* where high temperature distillation is effected at 900° C., and the gases are drawn off at d^1. Hydrogen is generated in a pipe *f* fed with water and passing around the grate, and the gases are mixed in a chamber j^1, j^2, heated to 600° C., and chambers j^3, j^4 heated to 300° C. The semi-coke is burnt in the grate *e*, and the gas generated passes through dust extractor k^1 and fan k^2 to the chamber j^4. In one of the chambers j^1—j^4, an electrode *m* is arranged connected to a source *n* of high potential 80,000—100,000 volts, and the gas is also subject to ultra-violet rays from the source *o* opposite a permeable wall l^2 of quartz.

357,411. DRYING HYPOCHLORATE. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 15, 1929.

Neutral calcium hypochlorite, which may contain calcium



357,411

chloride, is introduced from hopper *e* into a current of air d^1 at 140°-160° C., which is drawn through heater *a*. The air with suspended material passes through a pre-drying column i^1 where the temperature falls to 100° C., and a fresh current of air at 160° C. is added through pipe d^2 and carries the material to a fan h^3 and separator *l*.

357,060. DYES. Durand and Huguenin Akt.-Ges., 40 Fabrikstrasse, Basle, Switzerland. International Convention date, February 15, 1930. Addition to 316,315 (see THE CHEMICAL AGE. Vol. xxi, p. 295).

Acridine orange is nitrated, reduced with zinc dust, and the leuco compound re-oxidised with ferric chloride solution to obtain a dyestuff giving brown to violet-brown shades on silk and tannin-mordanted cotton.

357,077. ORGANO ARSENIC COMPOUNDS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 29, 1930.

o-Diamino-phenylarsenic acids are melted with glycollic acid or heated with a concentrated solution of glycollic acid in the presence of a mineral acid to obtain 2-hydroxymethylbenzimidazole-arsinic acids.

357,152. HYDROXYALIPHATIC AMINES; OXYALKYL-AMINOANTHRAQUINONES. H. Dreyfus, 22 Hanover Square, London. Application date, June 16, 1930.

Hydroxyaliphatic amines are obtained by reducing syanhydrins by means of zinc and dilute sulphuric acid, or sodium or sodium amalgam and alcohol, or by catalytic hydrogenation in the presence of nickel, copper, platinum, palladium, cobalt or iron. The hydrogenation may be effected in liquid or vapour phase, at atmospheric or higher pressure, and with pure hydrogen, water gas or producer gas. The cyanhydrins may be obtained *in situ* by the action of hydrocyanic acid on aliphatic aldehydes or ketones, or alkylene oxides, in the presence of caustic alkali, sodium or potassium carbonate, sodium or potassium cyanide, or by the action of an acid and alkali cyanide. The products may be treated by esterifying the hydroxy group, or alkylating, aralkylating or acylating the amino group, or may be used in preparing oxyalkylaminoanthraquinones by the action of a hydroxyaliphatic amine on an anthraquinone derivative containing a negative substituent, *e.g.*, a nitro group or a halogen, or on a leuco oxyanthraquinone followed by oxidation. Several examples are given.

357,164-5. DYES AND INTERMEDIATES. Imperial Chemical Industries, Ltd., Millbank, London, C. Shaw, and J. Thomas, Earl's Road, Grangemouth. Application date, March 14, 1930.

357,164, Dyestuffs and intermediates of the anthracene series are treated in molten phthalic anhydride with highly concentrated nitric acid. Examples are given of the treatment of dibenzanthrone, Bzl.Bzl'-dibenzanthronyl, and anthraquinone-naphthacridone (Caledon Red BN).

357,165, The nitro groups in nitrophthalic anhydrides or their derivatives are replaced by halogens, at 240° C. when the starting materials are molten. Examples are given of the conversion of 3-nitrophthalic anhydride to 3-chlorphthalic anhydride and several similar reactions.

357,170. HEAT TREATMENT OF HYDROCARBONS. J. Y. Jornson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 10, 1930.

Hydrocarbons of the methane series are subjected to heat treatment at 700°-1,200° C. in the presence of silicon which may be mixed with a binder such as clay, alumina or water glass, or may be deposited on silica gel or the like, to obtain liquid hydrocarbons such as hexylenes, heptylenes, benzene, toluene, xylene, naphthalene and anthracene, and gaseous hydrocarbons such as ethylene, propylene and butylene. The reaction chamber may be heated externally, or by an electric current through the silicon.

357,195. DYES. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 17, 1930.

Anthraquinone thioxanthone or acridone carboxylic acid chlorides are converted with aromatic amines in a solvent, into acid amides, *e.g.*, anthraquinone 2 : 1-(N)-benzacridone-6-carboxylic chloride is treated with 1-aminoanthraquinone, 1-amino-4-methoxyanthraquinone or 1-amino-5-benzoylaminoanthraquinone to obtain the acid amides. The starting

material is obtained by condensing the benzyl ester of 1-chloranthraquinone-6-carboxylic acid with anthranilic acid, ring-closing and heating with thionyl chloride. A number of additional examples are given.

357,250. ACIDYLAMINO COMPOUNDS AND AMIDINES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 20, 1930. Addition to 317,325 and 339,359 (see THE CHEMICAL AGE, Vol. xxi, p. 362, and Vol. xxiv, p. 125).

A cyclo-aliphatic carboxylic acid of the type of chaulmoogric acid, or its ester, chloride, amide or imino-ether is treated with an aromatic primary or secondary amine having a side chain containing basic nitrogen, to obtain acidylamino compounds and amidines. Examples are given.

357,285. DYES. Imperial Chemical Industries, Ltd., Millbank, London, P. F. Bangham and R. F. Thomson, Earl's Road, Grangemouth. Application July 1, 1930.

Anthraquinone-1 : 2 : 1' : 2'-naphthacridone (Caledon Red B.N.) is nitrated, with or without an organic medium, and the products reduced with sodium sulphide, and acylated, *e.g.*, with benzoyl chloride.

357,329. ACETIC ACID. K. G. Bergstrom and A. F. Zennström, 61 Rue Boursault, Paris. International Convention date, September 18, 1929.

Ligneous vegetable matter rich in resin is treated with dilute alkaline lye for the production of lignin, and the resulting lye contains sodium acetate from which acetic acid is recovered. Turpentine may be recovered by treating the material with steam.

357,528. ALKYL CHLORIDES. W. W. Triggs, London. From E. I. Du Pont de Nemours and Co., Wilmington, Del., U.S.A. Application date, March 21, 1930.

A vapour mixture of an alcohol of not more than three carbon atoms, and hydrogen chloride is heated to 110°-150° C. in the presence of zinc chloride or ferric chloride solution. The vapours are condensed to obtain alkyl chlorides.

357,592-3. DYES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 25, 1930.

357,592, The leuco compound of 4 : 6-dichlor-6'-methoxythioindigo, the preparation of which is described, is treated with sulphur trioxide in the presence of a tertiary base, and the acid sulphuric ester obtained is converted into stable salts.

Specifications Accepted with Date of Application

365,045. Hydrocarbons in the electric arc, Treatment of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). October 7, 1930.

365,060. Vulcanization of rubber. Rubber Service Laboratories Co. June 17, 1930.

365,076. Dehydrating acetic acid, Process for. Kodak, Ltd. (*Eastman Kodak Co.*). October 14 1930.

365,090. Sulphuric acid from flue gases, Manufacture of. Chemical Engineering and Wilton's Patent Furnace Co., Ltd., T. O. Wilton, N. Wilton, H. E. J. Green, and H. C. Mann. October 14, 1930.

365,097. Flotation treatment of cryolite. Humboldt-Deutzmortoren Akt.-Ges. May 12, 1930.

365,165. Benzoyl-benzoic acid and anthracene derivatives, Production of. Imperial Chemical Industries, Ltd., W. Smith and R. F. Thomson. October 16, 1930.

365,198. Barium hydroxide, Manufacture of. I. G. Farbenindustrie Akt.-Ges. October 21, 1929.

365,199. Aluminium, Manufacture of. R. G. Del Rio. October 21, 1930.

365,211. Organic mercury compounds, Manufacture of. W. W. Groves. (*I. G. Farbenindustrie Akt.-Ges.*). October 23, 1930.

365,214 Saturated amines, Manufacture of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). October 24, 1930.

365,276. Purification of gases containing hydrogen for use in the heat treatment of carbonaceous materials. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). December 18, 1930.

365,281. Thiocarbamides and derivatives of glyoxaline, Production of. Boots Pure Drug Co., Ltd., A. P. T. Easson and F. L. Pyman. December 20, 1930.

365,299. Sulphonated fatty-aromatic condensation products. Imperial Chemical Industries, Ltd., and R. P. McGlynn. January 5, 1931.

365,421. Aniline sulphonic acids, Manufacture of. W. W. Groves. April 4, 1930. Addition to 341,612.

365,468. Sulphuric acid esters of high molecular weight, Manufacture of. Soc. of Chemical Industry in Basle. May 28, 1930.

365,493. Rubber, Manufacture of. Imperial Chemical Industries, Ltd. July 24, 1930.

Scottish Shale Industry

Reduction in Operations

THE position of the Scottish Shale industry is reviewed in *The Glasgow Herald Trade Review* for 1931, which was published on December 31. From the outlook at the moment it seems probable that the fear of impending extinction, which was foreshadowed a few months back has been removed, and while no upward move in the price of petrol in Scotland has yet taken place, nor indeed seems likely, there is hope for better conditions in the fact that certain of the firms formerly active in depressing prices have abandoned these tactics and others have retired from the market. Within the past year the developments which were in progress at the Uphall and Grangemouth Refineries (handling imported petroleum) have been completed and the new plant has been in service for some months. It may be expected that benefits derived from this plant have gone some way to offset the effects of the slump in prices against which the products of home-refined imported petroleum derive no protection by exemption from the petrol tax.

By the date of the annual meeting of the controlling company in June, 1930, matters had so developed and affairs had gone so badly that it had become necessary to abandon a further group of mines, crude oil works, and the refinery at Oakbank. This curtailment of operations took effect a few weeks later, reducing the industry to rather less than one-half of what it was a dozen years ago, and throwing an additional number of men, approximately 2,000, permanently out of employment. At the same time it was clearly pointed out that this step gave no permanent security, its effect being only to reduce the industry's losses to a figure that could be met for a further not very extended period. The units thus shut down were mines at Deans and Philpstoun, retorting plant at Seafield, Philpstoun, and Oakbank, and the refinery at Oakbank.

Sulphate of Ammonia

The causes which have led to such tragic consequences to these long-established Scottish communities are, as before, to be found mainly in the conditions existing abroad. In less acute form such conditions have existed on previous occasions, but in former years the Scottish industry was supported by the revenue from its output of sulphate of ammonia, and it sometimes happened that a favourable market for this commodity enabled the shale industry to remain almost indifferent to a temporary decline in the value of oil. With the development of numerous processes for utilising atmospheric nitrogen, the value of nitrogen compounds has steadily diminished until to-day the recovery of by-product ammonia has almost ceased to be an economic process. The market has been so over supplied that even a number of the synthetic plants have been unable to operate profitably. So acute had this position become that in July, 1930, the world's principal producers of nitrogen compounds entered into an agreement, to which the Chilean nitrate industry also subscribed. This agreement had the effect of curtailing the output of the synthetic product and at the same time gave the by-product ammonia the first claim to the market. It also arrested the decline in value, but it expired in July, 1931, and negotiations for renewal having failed the immediate result was a further fall in values.

As a result of cracking operations the production of lubricating oil has ceased. The price of motor spirit remains at the same figure as a year ago. This, however, is due to the increases in the petrol tax brought into force by the Budgets of April and September; these had the effect of neutralising previous successive reductions in price, and as the tax is not collected on home-produced fuel, the shale industry has been protected against the full effect of these reductions; indeed, in view of the loss of revenue from sulphate of ammonia, the existence of the industry to-day depends on this exemption and the progress which has been made in increasing the production of petrol at the expense of the less valuable products.

New Synthetic Acetic Acid Plant in Germany

THE Lonza-Werke Elektrochemische Fabriken, of Waldshut, Baden, a German subsidiary of a large Swiss concern, has recently opened a new synthetic acetic acid plant not far from the German-Swiss border which is to operate outside of the German synthetic acid syndicate.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID, ACETIC, 40% TECH.—£19 15s. per ton d/d address U.K. in casks.

ACID CHROMIC.—11d. per lb., less 2½% d/d U.K.

ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.

AMMONIUM BICHROMATE.—8d. per lb., d/d U.K.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER, 35/37%.—Spot, £8 15s. per ton d/d station in casks, special terms for contracts.

BORAX, COMMERCIAL.—Granulated, £15 10s. per ton; powder, £17 per ton. (Packed in 1 cwt. bags, carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)

CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £5 5s. to £5 15s. per ton d/d station in drums.

CHROMIUM OXIDE.—10d. to 10½d. per lb. according to quantity d/d U.K.

CHROMETAN.—Crystals, 3¾d. per lb. Liquor, £19 10s. per ton d/d U.K.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 8d. to 2s. 3d. per gall.; pyridinised industrial, 1s. 10d. to 2s. 5d. per gall.; mineralised, 2s. 9d. to 3s. 3d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—5d. per lb. net d/d U.K., discount according to quantity; ground 5¾d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb. ex-wharf, London, in cwt. kegs.

POTASSIUM CHROMATE.—6½d. per lb. d/d U.K.

SALAMMONIAC.—First lump, spot, £42 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE, UNGROUND.—Spot, £3 15s. per ton d/d station in bulk.

SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.

SODA CAUSTIC, SOLID, 76/77° E.—Spot, £14 10s. per ton, d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.

SODIUM BICHROMATE CRYSTALS, CAKE AND POWDER.—4d. per lb. net d/d U.K., discount according to quantity. Anhydrous 5d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM CHROMATE.—3½d. per lb. d/d U.K.

SODIUM NITRITE.—Spot, £19 to £22 per ton, d/d station in drums.

SODIUM PHOSPHATE.—£13 to £15 per ton, f.o.r. London, casks free.

SODIUM SILICATE., 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d.

SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 15s. per ton, d/d in drums. Crystals—Spot, £7 15s. per ton, d/d in casks.

SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton; d/d station in kegs. Commercial—Spot, £9 10s. per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—5½d. to 6¼d. per lb. Crude 60's 1s. 4d. to 1s. 5d. per gall.

ACID CRESYLIC 99/100.—1s. 8d. to 1s. 9d. per gall. B.P., 2s. 6d. to 3s. per gall. Refined, 2s. to 2s. 2d. per gall. Pale, 98%, 1s. 7d. to 1s. 8d. Dark, 1s. 4d. to 1s. 4½d.

BENZOLE.—Prices at works: Crude, 7d. to 7½d. per gall.; Standard Motor, 1s. 2d. to 1s. 3d. per gall. 90%.—1s. 3d. to 1s. 4d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.

TOLUOLE.—90%, 2s. 4d. per gall. Pure, 2s. 6d. per gall.

XYLOL.—2s. per gall. Pure, 2s. 3d. per gall.

CREOSOTE.—Standard specification, for export, 4¾d. to 5d. net per gall. f.o.b.; for Home, 3¾d. per gall. d/d.

NAPHTHA.—Solvent, 90/160, 1s. 3d. per gall. Solvent, 95/160, 1s. 5d. to 1s. 6d. per gall. Solvent, 90/190, 11d. to 1s. 2d. per gall.

NAPHTHALENE.—Purified Crystals, £11 10s. per ton, in bags.

PITCH.—Medium soft, 80s. to 85s. per ton, in bulk at makers' works.

PYRIDINE.—90/140, 4s. per gall., 90/160, 4s. to 4s. 6d. per gall., 90/180, 2s. to 2s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID, BENZOIC, B.P. (ex Toluol).—1s. 9½d. per lb.

ACID, GAMMA.—Spot, 4s. per lb. 100% d/d buyer's works.

ACID H.—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.

ACID NAPHTHIONIC.—1s. 2d. per lb. 100% d/d buyer's works.

ACID NEVILLE AND WINTHER.—Spot, 3s. per lb. 100% d/d buyer's works.

ACID SULPHANILIC.—Spot, 8¼d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.

BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra, d/d buyer's works.

BENZIDINE BASE.—Spot, 2s. 5d. per lb. 100% d/d buyer's works.

o-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.

p-CRESOL 34.5° C.—1s. 9d. per lb., in ton lots.

DICHLORANILINE.—2s. 2d. per lb.

DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.

DINITROBENZENE.—8½d. per lb.

DINITROTOLUENE.—48/50° C., 8d. per lb.; 66/68° C., 8¾d. per lb.

DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works.

α-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.

B-NAPHTHOL.—Spot, £75 per ton in 1 ton lots, d/d buyer's works.

α-NAPHTHYLAMINE.—Spot, 11½d. per lb., d/d buyer's works.

B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 10d. per lb.

m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 6½d. per lb.; 5-cwt. lots, drums extra, d/d buyers' works.

NITRONAPHTHALENE.—8½d. per lb.

SODIUM NAPHTHIONATE.—Spot, 1s. 9d. per lb. 100% d/d buyer's works.

o-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 9d. per lb., d/d buyer's works.

m-XYLIDINE ACETATE.—3s. 6d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £7 10s. per ton. Grey, £12 per ton. Liquor, 8d. to 9d. per gall.

ACETIC ACID, TECHNICAL, 40%.—£16 15s. to £17 15s. per ton.

ACETONE.—£63 to £65 per ton.

AMYL ACETATE, TECHNICAL.—90s. to 98s. per cwt.

CHARCOAL.—£6 10s. to £10 10s. per ton, according to grade and locality.

IRON LIQUOR.—24°/30° Tw., 10d. to 1s. 2d. per gall.

METHYL ACETONE, 40/50%.—£52 per ton.

RED LIQUOR.—16° Tw., 8½d. to 10d. per gall.

WOOD CREOSOTE.—1s. to 2s. 6d. per gall., unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. to 4s. per gall. Solvent, 3s. 9d. to 4s. 9d. per gall.

WOOD TAR.—£2 10s. to £6 per ton.

BROWN SUGAR OF LEAD.—£32 per ton.

Pharmaceutical and Photographic Chemicals

The following changes are reported in the markets for pharmaceutical and photographic chemicals:—

EPHEDRINE ALKALOID.—7s. 6d. to 8s. per oz.

EPHEDRINE HYDROCHLORIDE.—6s. 6d. to 7s. per oz.

EPHEDRINE SULPHATE.—6s. to 6s. 6d. per oz.

HIPPURIC ACID.—17s. 6d. to 21s. 6d. per lb.

AMMONIUM HIPPURATE.—19s. 6d. to 23s. 6d. per lb.

CALCIUM HIPPURATE.—26s. to 30s. per lb.

LITHIUM HIPPURATE.—18s. 6d. to 22s. 6d. per lb.

POTASSIUM HIPPURATE.—26s. to 30s. per lb.

SODIUM HIPPURATE.—23s. 6d. to 27s. 6d. per lb.

SEIDLITZ POWDER (PULV.).—66s. 3d. to 70s. per cwt.

SODIUM BARBITONUM.—12s. 9d. to 14s. per lb.

Rubber Chemicals

There are no changes to report in the market prices of rubber chemicals which were quoted in THE CHEMICAL AGE of January 16.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, February 4, 1932.

IN view of the imposition of import tariffs, prices are very firm with an upward tendency and an active inquiry for all chemicals.

General Chemicals

ACETONE.—Is firm at £65/68 per ton and in active demand.

ACID, ACETIC.—Technical 80% £37 5s. to £39 5s. per ton and Pure 80% £38 5s. to £40 5s. per ton, and in regular daily demand.

ACID, CITRIC.—1s. 2d. per lb., less 5%. The better demand continues. (Another source quotes 1s. 1d. per lb.).

ACID, FORMIC.—Is firm at £51 to £52 per ton with a good demand.

ACID, OXALIC.—Continues active at £50 per ton in casks and £51 10s. per ton in kegs.

ACID, TARTARIC.—Is firm at about 1s. 2d. per lb., less 5% and in good demand.

ALUMINA SULPHATE.—Continues steady at £8 15s. to £9 10s. per ton. (Another source quotes £8 10s. per ton.)

ARSENIC.—The market is ruling firm at about £24 10s. c.i.f. main U.K. ports for imported material, and there has been a steady demand.

BARIUM CHLORIDE.—Is firm at about £11 10s. per ton with a fair demand.

CREAM OF TARTAR.—Is very firm at 102s. 6d. to 105s. per cwt.

FORMALDEHYDE.—In good steady demand and firm at about £30 per ton.

LEAD ACETATE.—White, about £44 per ton with Brown £1 per ton less. (Another source quotes £43 per ton for White, £42 per ton for Brown.)

LITHOPONE.—In steady request with price firm at about £30 per ton.

POTASH BICHROMATE.—Firm at 5d. per lb., with discounts for contracts.

POTASH CHLORATE.—Steady at £32/34 per ton.

POTASH PERMANGANATE.—Needle Crystals, B.P., in good steady request at 8½d. per lb.

POTASH PRUSSIATE.—Is in good demand and firm at about 8½d. per lb.

SODA ACETATE.—Is firm at about £21 10s. per ton.

SODA BICHROMATE.—Firm at 4d. per lb., with discounts for contracts.

SODA CHLORATE.—Is very firm at about £30 per ton.

SODA HYPOSULPHITE.—Continues in active request with a firm market.

SODA NITRITE.—Is very firm at £20 to £21 per ton.

SODA PRUSSIATE.—Firm and in good demand at 5d. to 5¾d. per lb., according to quantity.

SODA SULPHIDE.—Continues in good request at unchanged prices.

ZINC SULPHATE.—£12 per ton and steady.

Coal Tar Products

THE coal tar products market is unchanged from last week, and prices still remain firm.

MOTOR BENZOL.—Quoted at about 1s. 4½d. to 1s. 5½d. per gallon f.o.r.

SOLVENT NAPHTHA.—Unchanged at about 1s. 1½d. to 1s. 2d. per gallon f.o.r.

HEAVY NAPHTHA.—Remains at about 11d. to 1s. 0½d. per gallon f.o.r.

CREOSOTE OIL.—Unchanged, at about 3d. to 3½d. per gallon f.o.r. in the North, and at about 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Remains at about 1s. 6d. per gallon f.o.r. for the 98/100% quality, and at about 1s. 4d. per gallon for the Dark quality 95/97%.

NAPHTHALENES.—Quoted at £3 to £3 10s. per ton for the firelighter quality, at £4 to £4 10s. per ton for the 74/76 quality, and at about £5 10s. to £6 per ton for the 76/78 quality.

PITCH.—Worth 70s. to 75s. per ton, f.o.b. East Coast port.

THE following additional market conditions are reported:—

CARBOLIC ACID.—Market steady, prices unchanged at 5½d. to 6¼d. per lb. in bulk packing.

CRESYLIC ACID.—Prices unchanged, Pale 97/99%, 1s. 7d. to 1s. 9d. per gallon; 99/100% at 1s. 10d. to 2s., with special grades 2s. 2d. to 2s. 6d. per gallon.

SALICYLATES.—Market steady, prices unchanged.

SACCHARIN.—Unchanged at 43s. 6d. per lb., usual rebates on quantities.

VANILLIN.—Unchanged at 16s. to 18s. pjer lb. for clove oil material. Material not guaranteed manufactured from clove oil quoted at 14s. 3d. to 16s. 3d. per lb.

Latest Oil Prices

LONDON, February 3.—LINSEED OIL was firmer. Spot, ex mill, £16 15s.; February, £14 10s.; February-April, £14 15s.; May-August, £15 17s. 6d.; September-December, £17 2s. 6d. per ton, naked. RAPE OIL was steady. Crude extracted, £30 10s.; technical refined, £32 10s. per ton, naked, ex wharf. COTTON OIL was very firm. Egyptian crude, £22; refined common edible, £25; and deodorised, £27 per ton, naked, ex mill. TURPENTINE was easy. American, spot, 51s.; March-April, 51s 9d. per cwt.

HULL.—LINSEED OIL, spot and February closed at £14 17s. 6d.; March-April, at £15; May-August, at £16; September-December at £17, naked. COTTON OIL, Egyptian, crude, spot, £22; edible, refined, spot, £24 5s.; technical, spot, £24 5s.; deodorised, £26 5s., naked. PALM KERNEL OIL, crude, f.m.q., spot, £24 10s., naked GROUNDNUT OIL, crushed-extracted, spot, £31 10s.; deodorised, £35 10s. SOYA OIL, crushed-extracted, spot, £20 10s.; deodorised, £24. RAPE OIL, crushed-extracted, spot, £29 10s.; refined, £31 10s. per ton. COD OIL, 16s. per cwt. CASTOR OIL, pharmacy, spot, 45s 6d.; firsts, 40s. 6d.; seconds, 38s. 6d. per cwt. TURPENTINE, American, spot, 54s. 6d. per cwt.

Nitrogen Fertilisers

SULPHATE OF AMMONIA.—*Export.*—The market continues unchanged at £5 5s. per ton f.o.b. U.K. port in single bags, although the demand is better in consuming markets. It appears that supplies are plentiful. *Home.*—Merchants report a considerable movement of sulphate in various parts of the country. This is no doubt due to early buying to avoid any delays of delivery in the spring. Prices remain unchanged.

IMPORTED NITRATE OF SODA.—The prices of this product remain unchanged. We have not heard of any large movement of stocks.

BRITISH NITRATE OF SODA.—There is nothing of interest to report.

NITRO-CHALK.—It is reported that this fertiliser is becoming more popular, and we anticipate that sales will show considerable expansion this season. The price remains at £7 5s. for delivery until June.

South Wales By-Products

THERE is little change in South Wales by-product activities. Business in all sections is quiet, most of the buying being sporadic and on a moderate scale. The big pitch users, especially patent fuel makers, are confining their purchases to prompt parcels. There is no change in values, but supplies are well in excess of demand. The call for road tar is slightly better, but remains far from satisfactory. Quotations are unchanged round about 13s. per 40-gallon barrel delivered. There is a steady, but moderate, call for refined tars with quotations unchanged for coke oven and gasworks tar. Naphthas are quiet, solvent having a small, sporadic call, while heavy has practically no demand. Motor benzol continues to be a fairly bright feature, but creosote remains weak. Patent fuel and coke exports are unsatisfactory. Patent fuel prices are:—19s. to 19s. 3d., ex-ship Cardiff; 18s. to 18s. 3d., ex-ship Swansea. Coke prices are:—Best foundry, 32s. 6d. to 36s.; good foundry, 22s. 6d. to 25s.; furnace, 17s. to 18s.

Scottish Coal Tar Products

CONDITIONS have been somewhat dull during the week although inquiries are numerous. Coal tar pitch and refined tar continue firm.

CRESYLIC ACID.—Stocks are high and prices are irregular. Pale, 99/100 per cent., 1s. 3½d. to 1s. 4½d. per gallon; pale, 97/99 per cent., 1s. 1½d. to 1s. 2½d.; dark, 97/99 per cent., 1s. 0½d. to 1s. 1½d.; all f.o.r. makers' works. High boiling acid continues scarce, however, at 2s. 6d. to 3s. per gallon.

CREOSOTE OIL.—Supplies are not too plentiful, but quotations are unchanged. Specification oils, 2⅞d. to 3¼d. per gallon; washed oil, 3½d. to 3¾d.; gasworks ordinary, 3¾d. to 4d.; all f.o.r. naked.

COAL TAR PITCH.—Export value is now 70s. to 75s. per ton f.o.b. Glasgow, but practically nothing is available for shipment. Home business is commanding 75s. to 77s. 6d. per ton ex works.

REFINED COAL TAR.—Steady at 4d. per gallon ex makers' works in buyers' packages.

New Purity Standard for Helium

THE production of several hundred cubic feet of helium that is 99.96 per cent. pure is announced by the United States Bureau of Mines. The work was performed in the Cryogenic Laboratory at the Amarillo (Texas) Helium Plant. Although the production of helium of this unusual purity is still in the experimental state, it is of interest to know that the amount in question was obtained at the rate of 50,000 cu. ft. per day, and that it might be safe to state that the method bears some promise of commercial application. Previous to the operation of the Amarillo Helium Plant, the average purity of helium obtained did not exceed 96 per cent.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Chas. Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, February 3, 1932.

INQUIRIES for home business continue to be brisk. Export business, however, has fallen off.

ACETONE.—Quoted £66 to £68 per ton ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £48 to £59 per ton; pure, 80%, £38 5s. per ton; technical, 80%, £37 5s. delivered buyer's premises Great Britain.

ACID, BORIC.—Granulated commercial, £26 10s. per ton; B.P. crystals, £35 10s. per ton; B.P. powder, £36 10s. per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at £50 to £53 per ton, ex store.

ACID, SULPHURIC.—£3 12s. 6d. per ton, ex works, for 144° quality. £7 per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS—Quoted 1s. 1¼d. to 1s. 1½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted £8 to £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted at £9 per ton, ex store.

AMMONIA ANHYDROUS.—Quoted 10d. to 1s. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—British dog tooth crystals quoted round £32 to £35 per ton, carriage paid according to quantity.

ANTIMONY OXIDE.—Spot material quoted at about £29 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £27 per ton, ex wharf. Spot material still on offer at £28 10s. per ton, ex store.

BARIUM CHLORIDE.—Price about £11 5s. per ton in casks, ex store.

BLEACHING POWDER.—British manufacturers' contract price to consumers £8 15s. per ton, in 5s. 6d. cwt. casks.

CALCIUM CHLORIDE.—British manufacturers' price, £5 5s. to £5 15s. per ton, according to quantity and point of delivery.

COPPERAS, GREEN—At about £3 15s. per ton, f.o.r. or ex works.

FORMALDEHYDE, 40%.—Now quoted £28 per ton, ex store.

GLAUBER SALTS.—English material quoted £3 15s. per ton, ex station.

LEAD, RED.—Price now £30 per ton, delivered buyer's works.

LEAD, WHITE.—Quoted £40 per ton, carriage paid.

LEAD ACETATE.—White crystals quoted round about £42 to £44 per ton c.i.f. U.K. ports. Brown on offer at about £1 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £9 per ton, ex store.

METHYLATED SPIRIT.—Industrial quality 64 o.p., quoted 1s. 8d. to 2s. 3d. per gallon.

POTASSIUM BICHROMATE.—Quoted 5d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—96% to 98%. In good demand. Spot material on offer, £28 per ton ex store.

POTASSIUM CHLORATE.—99¾/100% Powder.—Quoted £34 per ton ex store.

POTASSIUM NITRATE.—Refined granulated quality quoted £24 10s. per ton, c.i.f. U.K. ports. Spot material on offer at about £25 per ton ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 7d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 8d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77%, £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums; all carriage paid buyer's station, minimum four-toun lots; for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station.

SODIUM BICHROMATE.—Quoted 4d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 5s. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, four-ton lots.

SODIUM PRUSSIATE.—Quoted 5d. to 5¼d. per lb. ex store.

SODIUM SULPHATE (SALTCAKE).—Price, 65s. per ton, delivered, for ground quality.

SODIUM SULPHIDE.—Prices for home consumption: solid 60/62%, £10 5s. per ton; broken, 60/62%, £11 5s. per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyer's works on contract, minimum four-ton lots. Spot material, solid, 5s. per ton extra; crystals, 2s. 6d. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £12 10s. per ton; rock, £9 per ton; ground American, £10 per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £18 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Indian Chemical Notes

Fertilisers on Plantations

THE use of fertilisers on the tea and coffee plantations in Southern India is increasing rapidly. The most recent fertiliser introduced is known as "Kosphos" (kossier phosphate) for which Parry's are the sole agents in South India. It is a finely ground mineral phosphate, the fineness being such that 90 per cent. passes through a sieve containing 40,000 holes per square inch. This extreme fineness gives increased percentage of water soluble phosphoric acid in the superphosphate produced. Another special feature of kossier phosphate is that when applied to south Indian soils, its fineness makes it easily assimilable.

Salt Licences

Under the Irwin-Gandhi agreement, the poorer classes in India are allowed, with certain restrictions, to collect and manufacture salt. For this reason, states the Report of the Northern India Salt Revenue Department, there remains no necessity for licences except in the case of refiners, and it is understood that proposals have already been formulated for the abolition of the whole system of licensing for crude saltpetre, *khari*, *rassi* and *sajji*. Up to the present, it is reported that very little advantage has been taken of the concession in the areas covered by the Internal Branch. It is only in one district in U.P. that salt has been manufactured from salt earth on a fairly large scale.

The Indian Drug Inquiry

The recommendations of the Indian Drug Inquiry Committee have been hailed everywhere in India. It is true that the Government has low funds in this time of depression to devote to the promotion of Indian industry, but immediate action is necessary and has been recommended to prohibit the use of spurious drugs. It is understood that in the next session of the Assembly, a Bill to this effect will be introduced. Meanwhile, the Indian manufacturing concerns are getting ready for an extension of their works. The Bengal Chemical and Pharmaceutical Works have decided to extend their works to a considerable extent. With this end in view the manager of these works made a tour recently in England, Europe and America and has now returned to this country.

Government's Quinine Production

It is also of importance to note that the Government enterprise in the cultivation of cinchona and the production of quinine in Bengal is showing good progress. During the past year, the production of quinine amounted to 43,000 lb. and that of cinchona febrifuge to 20,000 lb., and the total profit on the enterprise during the year was about Rs.3 lakhs. The price of quinine remains the same, for it is feared that if it is supplied to the public for a price below the world price, most of the benefit might go to dealers instead of to consumers, and there is possibility of exports depleting stocks.

Arsenates to be Made in Canada

AN American manufacturer has announced the establishment of a plant at Burlington, Ontario, for the manufacture of calcium and lead arsenates, according to statements in the Toronto press.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, February 3, 1932.

Several depressing influences have been at work in the chemical market here during the past week to restrict new business. First and foremost have been the serious developments in the Sino-Japanese situation, with its direct and indirect effects on trade in chemicals, while labour troubles in the textile industries—threatened and actual—naturally are an important restrictive force. Altogether, therefore, it is not surprising that there are few chemical traders who are able to report at all enthusiastically about the state of the demand. On the other hand, there does not appear to have been much falling off up to the present in the rate at which materials are being called for against existing contracts. With regard to prices, these remain steady to firm generally.

Heavy Chemicals

Buying interest in sulphide of sodium this week has continued rather quiet, but at about £8 10s. per ton for the commercial quality and £11 or thereabouts for the 60-62 per cent. concentrated solid material values are much the same as before. Bicarbonate of soda meets with a moderate inquiry and quotations are very firm at about £10 10s. per ton, with alkali in more or less the same position at £6 per ton. A quietly steady trade is reported in respect of prussiate of soda, current offers of which range from 5d. to 5½d. per lb., according to quantity, for crystals. The demand for phosphate of soda leaves much to be desired, although at round £13 10s. per ton for the dibasic quality values are about maintained. Contract deliveries of caustic soda keep up at a reasonably satisfactory level, with quotations at from £12 15s. to £14 per ton, according to quality. A quietly steady business is going through in the case of bichromate of soda at 4d. per lb., less 1 to 3½ per cent., according to quantity, for January-March contract comitments, and 4d. per lb. net for prompt parcels. The demand for hyposulphite of soda is no more than moderate; offers of the photographic grade are from £15 to £15 10s. per ton, and of the commercial material at about £9 5s. Chlorate of soda is in quiet request on the basis of £29 to £30 per ton. There is a fairly steady movement of saltcake, offers of which range from about £3 to £3 2s. 6d. per ton.

In one or two instances potash prices seem to be a shade less strong although the actual difference compared with recent levels is rarely very marked. Bichromate is unchanged at 5d. per lb., less 1 to 3½ per cent., in contracts, and 5d. per lb. net for prompt lots. Caustic potash is in moderate request at about £38 per ton, with carbonate currently quoted at from £31 to £33. Yellow prussiate of potash meets with a quiet demand at 8½d. per lb. Permanganate of potash is about maintained at 8¼d. per lb. for the commercial quality and 8½d. for the B.P. With regard to chlorate of potash, quotations are fairly steady at up to £34 per ton, but buying interest just now is not very strong.

Arsenic is scarce so far as the white powdered, Cornish makes, are concerned, and values are largely nominal at £25 10os. per ton at the mines, with foreign obtainable at about 20s. less. The demand for sulphate of copper remains decidedly moderate but at about £18 per ton, f.o.b., offers show little alterations on balance. The acetates of lime keep up at about £8 per ton for the brown grade and £12 to £12 10s. for the grey. Nitrate of lead is quiet at £28 10s. per ton, with white and brown acetate at round £40 and £39, respectively.

Acids and Tar Products

Oxalic acid continues to move off in moderate quantities, and offers in this section are well held at about £2 10s. per cwt., ex store. The demand for tartaric acid this week has been rather featureless, with prices at 1s. 1¾d. per lb., citric acid being unchanged at about 1s. 2d. Acetic acid is firm at £52 per ton for the technical glacial product and £39 5s. for the commercial 80 per cent.

Among the by-products, pitch remains in comparatively short supply for early delivery and quotations are very firm at from 75s. to 80s. per ton., f.o.b. The demand for creosote oil is rather quiet still but prices keep up at from about 3½d. to 5d. per gallon, at works.

Company News

International Nickel Co. of Canada.—A meeting of the Board to consider the dividend will be held on February 15 instead of February 1 as in previous years.

English China Clays, Ltd.—It is announced that consideration of the preference dividend is to be deferred until April, when the final accounts will be available.

Borax Consolidated, Ltd.—The directors announce that they are unable to recommend a dividend on the 6 per cent. non-cumulative preferred ordinary shares of £5 each or on the £1 deferred ordinary shares for the year to September 30 last.

Gas Light and Coke Co.—The directors have decided to recommend a final dividend on the ordinary stock for the year 1931 of £2 16s. per cent., together with the interim dividend of a similar amount, making £5 12s. per cent., less tax, for the year, or 5 3/5 per cent., less tax.

Canada Cement Co.—The profit and loss account for the year to November 30 last shows a profit from operations of $3,111,321. From this is deducted bond interest, reserves for fire insurance, repairs, accidents, etc., leaving $1,553,191. The preference dividend absorbs $1,362,751, leaving $190,440, which, together with $467,987 brought forward, makes $658,427 to be carried forward.

English Velvet and Cord Dyers' Association.—A final dividend for the half-year ended December 31 at the rate of 5 per cent. per annum is recommended on the cumulative preference shares and of 4 per cent. per annum on the ordinary shares, making, with the interim dividend, 4 per cent. for the year, both less income tax. After the transfer of £20,000 from reserve, there is a balance of £14,078 to carry forward.

Science and Modern Society

Evolution of a New Order

Mr. H. T. F. Rhodes presented a paper on "Science and Modern Society" at a meeting of the Manchester Section of the British Association of Chemists on January 27. He said that science had proved itself both a great constructive and a great destructive force, and its discoveries were intimately bound up with the pressing economic problems of the day. The chief problem that science had raised for civilisation was that of abundance. Over-production, however, might more fitly be described as under-consumption.

In his view, if we applied to social organisation the forces we had put into operation in the sphere of production we should have a more smoothly running social machine. If there was one thing evident about contemporary politics and diplomacy it was their timidity, and timidity was about the most dangerous of all characteristics in times like the present. Anyone who dispassionately reviewed the situation could not fail to observe what was wrong, and whatever party or individual emerged with the determination to put it right would allow no conservative prejudice to stand in the way.

In science and in the scientific man there existed actually or potentially all those qualities required to evolve a new order. The time was ripe. In Europe, with the examples of Fascism and Communism before them, which were at least attempts to make the administrative machine fit the productive one, it should surely be possible, having observed and profited by their mistakes, to make a scientific synthesis of the best elements in both. If this could not be done, Fascism or Bolshevism would inevitably overtake our civilisation, and as they stood neither could solve the problem.

New Zealand Gum Kauri Export

Exports of gum kauri from New Zealand dropped from 3,207 metric tons, having a value of £157,687, for the first nine months of 1930 to 2,316 tons, valued at £99,604, for the corresponding months of 1931. Of special significance in the trade is the replacement of the United States as the principal purchaser by the United Kingdom whose receipts are increasing to the extent that over 50 per cent. of the total exportation goes to that country. The opinion expressed by those in the trade is that the increase of gum imports by the United Kingdom is attributed partly to re-exports to Russia. The present demand is very largely for high grade gums, it being difficult to dispose of the poorer grades.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

COLORANE, LTD., London, W.C., chemical process manufacturers. (M., 6/2/32.) Registered January 25, series of £32,5000 (not ex.) debentures, present issue £500; general charge.

Satisfaction

ALUMINIUM CORPORATION, LTD., London, S.W. (M.S., 6/2/32.) Satisfactions registered January 25, £600, registered April 8, 1925; also registered January 26, £1,600, balance of amount registered January 19, 1920.

COOKSON AND CO., LTD., Newcastle-on-Tyne, lead smelters, etc. (M.S., 6/2/32.) Satisfaction registered January 21, £8,900, part of amount registered March 15, 1930.

LEVER BROTHERS, LTD., Port Sunlight, soap makers. (M.S., 6/2/32.) Satisfaction registered January 22, £175,828, part of amount registered April 13, 1921.

County Court Judgment

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

RATIONAL CARBONIZATION SYNDICATE, LTD., 13 Victoria Street, London, S.W., manufacturers. (C.C., 6/2/32.) January 1. £28. 9s. 4d.

London Gazette, &c.

Company Winding Up Voluntarily

NOVOCRETE AND CEMENT PRODUCTS CO. (NORTHERN AREA), LTD. (C.W.U.V., 6/2/32.) Creditors' claims to Richard Castle, 5 Chancery Lane, London, W.C.2, the liquidator of the company by March 14.

Bankruptcy Information

WILLIAM SWAN, 25 Altar Drive, Heaton, Bradford, lately carrying on business under the style of "THE LAUREL CHEMICAL CO.," at Laurel Works, Hubert St., Leeds Road, Bradford, chemical manufacturer. First meeting February 8, 1932, 10.30 a.m., at the Official Receiver's Office, 12 Duke Street, Bradford. Public examination March 9, 1932, 10.45 a.m., at The County Court, Manor Row, Bradford.

New Companies Registered

CLIFFORD CHRISTOPHERSON AND CO., LTD. Registered January 30. Nominal capital £10,000 in £1 shares. Agents for chemical manufacturers and for the sale of chemical products of every kind; chemists, druggists, drysalters, oil and colourmen, etc. Directors: D. C. Christopherson, Marlow House, Lloyds Avenue, London, E.C.3; K. H. Wilson, H. C. Christopherson, A. A. King.

GORTON CELLULOID CO., LTD., Excelsior Works, Miles Street, West Gorton, Manchester. Registered January 29. Nominal capital £100 in £1 shares. To carry on the business of dealers in and manufacturers of compounds of cellulose, including celluloid, cellulose acetate and/or other compounds; dealers in new and second-hand cinematograph films and other articles, etc. Directors: A. Shallcross, J. E. Blakeley, and A. Shallcross.

RELOR CO., LTD. Registered February 1. Nominal capital £1,000 in £1 shares. Manufacturers, refiners, preparers, importers and exporters of and dealers in edible fats and oils, candles, soap, soda, resin, naphtha and all kinds of oils, oil bearing materials, oleaginous and saponaceous substances, etc. A subscriber: E. White, 73 Southampton Row, London, W.C.

New Chemical Trade Marks

These lists are specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52 Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to February 27, 1932.

VULCAID.

527,315. Class 1.—Chemical substances for use as accelerators and aids to vulcanisation of india-rubber and india-rubber compounds. Binney and Smith Co. (a corporation duly organised under the laws of the State of New Jersey), 41 East 42nd Street, New York, United States of America; manufacturers. November 21, 1931.

CORONATION.

527,585. Class 1.—Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Victor Blagden and Co., Ltd., 4 Lloyds Avenue, London, E.C.3; chemical merchants. December 3, 1931.

GREVEREEN.

527,966. Class 1.—Chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. The Dux Chemical Solutions Co., Ltd., St. Leonard's Works, Hancock Road, Bromley-by-Bow; London, E.3; manufacturers. December 17, 1931.

BACTYL.

527,727. Class 2.—Chemical substances used for agricultural, horticultural, veterinary, and sanitary purposes. The Strawson Chemical Co., Ltd., 79 Queen Victoria Street, London, E.C.4; wholesale and export chemists. December 9, 1931.

CREOLINA.

528,242. Class 2.—Chemical substances used for agricultural, horticultural, veterinary, and sanitary purposes. William Pearson, Ltd., 61 Mark Lane, London, E.C.3; manufacturers. December 31, 1931.

ABA-COLIN.

525,061. Class 3.—Chemical substances prepared for use in medicine and pharmacy. H. R. Napp, Ltd., 3 and 4 Clement's Inn, Kingsway, London, W.C.2; wholesale chemists. August 18, 1931. (By Consent.)

CREOLINA.

528,243. Class 3.—Chemical substances prepared for use in medicine and pharmacy. William Pearson, Ltd., 61 Mark Lane, London, E.C.3; manufacturers. December 31, 1931.

Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country) except where otherwise stated.

SOUTH AFRICA.—A firm of manufacturers' agents in Cape Town desires to secure representation of United Kingdom manufacturers of all kinds of rustless steel goods. (Ref. No. 191.)

EGYPT.—A commission agent in Alexandria desires to obtain representation of United Kingdom manufacturers of chemicals, preservatives, etc. (Ref. No. 223.)

UNITED STATES.—H.M. Consul at Detroit, Michigan, reports that a local firm desires to be placed in touch with United Kingdom manufacturers of conveyor chains. (Ref. G.X. 11,113.)